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REVIEW OF MILITARY LITERATURE

THE COMMAND AND GENERAL STAFF SCHOOL QUARTERLY

VOL. XIV DECEMBER, 1934 No. 55

CONTENTS

	Page
Evolution of Infantry Tactics, 1914-1918	5
Defense Against Combat Vehicles	35
Russo-Polish War, 1919-1920. Part II	43
Employment of Artillery in an Attack	48
Demolitions	52
Cavalry Command Post Exercise	76
War of Coalition	100
Tanks in Future Wars	102
Rapid Contact Verus Methodical Advance	104
Reorganization of the Italian Army	108
Counterattack	109
Motorization of Supply Columns	109
Liaison	118
Artillery Densities	119
Air Reconnaissance and Strategic Maneuver	129
German Strategy in 1918	130
River Crossings	130
Evacuation of Wounded From Armored Vehicles	133
Technical Problems of Modern Wars	137
Academic Notes	141
Military Intelligence. Combat Int. Reg. (Tentative)	141
Attack	161
Commander's Procedure in Dealing with his Staff	162
Book Reviews	165
Library Bulletin	179
Subject Index	183

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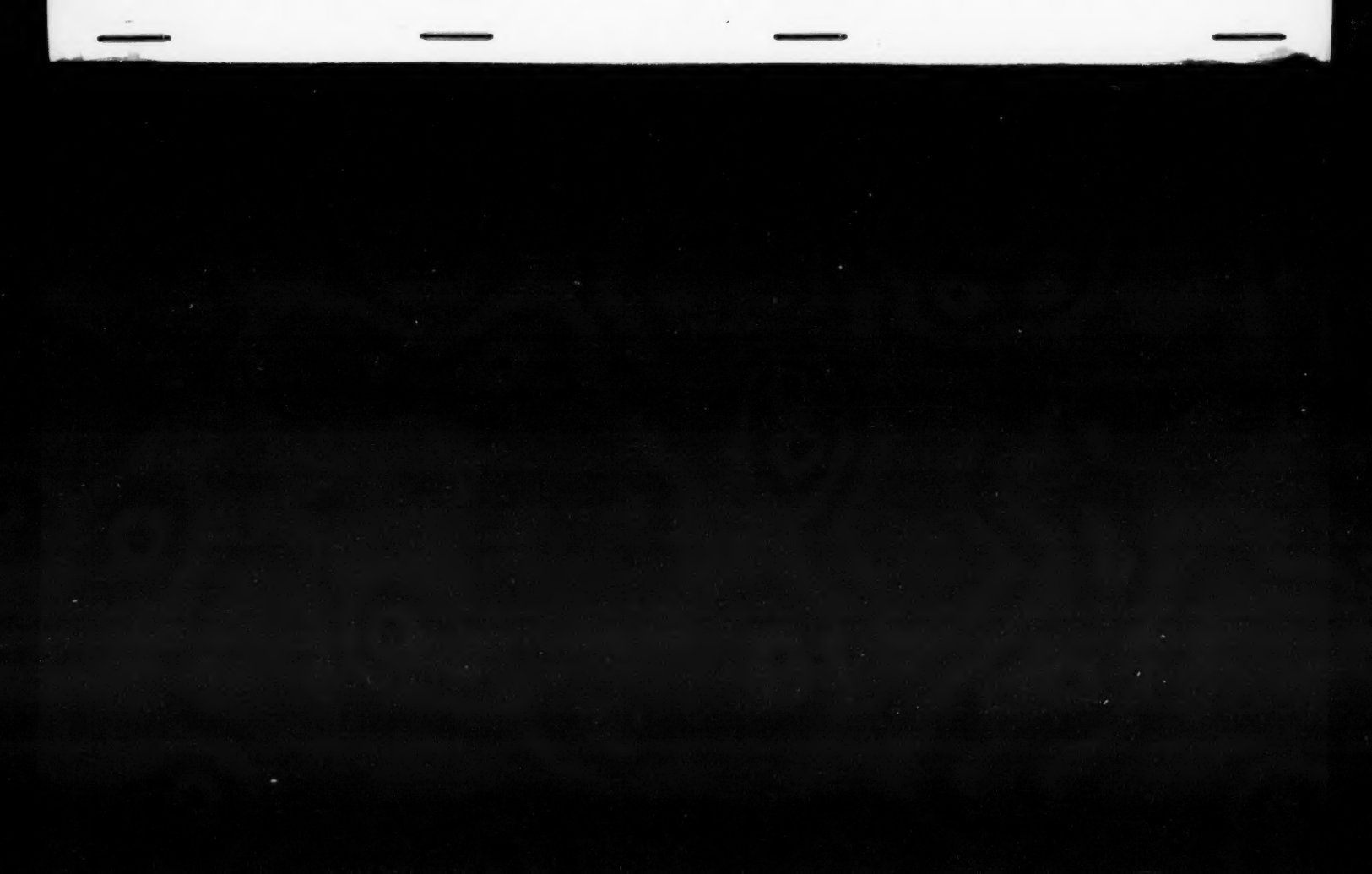

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REVIEW OF MILITARY LITERATURE

THE COMMAND AND GENERAL STAFF SCHOOL QUARTERLY

Editors
MAJOR C.A. WILLOUGHBY
MAJOR FRED DURING

FOREWORD

The object of this publication is a systematic review of current military literature, through cataloging articles of professional value, in selected military and naval periodicals, in the domestic and foreign field.

Articles from foreign periodicals are treated by translations of titles and digests of contents; material of particular importance is covered more extensively in a Section of "Abstracts of Foreign-language Articles."

A "Book Review" Section contains reviews of outstanding books, recently accessioned, which are of particular professional significance.

This material is published as a guide to modern military tendencies and to inspire vigorous thought on the subjects treated.

The opinions expressed by authors are not necessarily official.

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CONTENTS

Page

Section 1—ORIGINAL MILITARY STUDIES 5
This Section contains original contributions by graduates of the Command & General Staff School.

Section 2—ABSTRACTS OF FOREIGN-LANGUAGE ARTICLES 35
This Section contains abstracts of selected articles from foreign military periodicals. Section 2 is designed to cover articles regarded as important; the remaining articles, for each magazine are listed in Section 4.

Section 3—DIRECTORY OF PERIODICALS 83
A guide to Section 4 and Section 8.

Section 4—CATALOG OF SELECTED PERIODICAL ARTICLES 85
A systematic review of the contents of selected military periodicals; the articles contained therein are listed in numerical sequence. In English-language magazines, only titles are quoted. Foreign-language periodicals are covered in greater detail; articles are digested to a degree to furnish an adequate idea of contents and significance.

Section 5—ACADEMIC NOTES, C. & G.S.S. 141
Reprint of current School memoranda, which affect instructional procedure or tactical doctrine.

Section 6—BOOK REVIEWS 165

Section 7—LIBRARY BULLETIN 179

Section 8—READERS' GUIDE AND SUBJECT INDEX 183
All subject-headings are arranged in alphabetic sequence and can be consulted like a dictionary. Note also List of Periodicals Indexed and Key to Abbreviations.

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LIST OF OFFICERS CONTRIBUTING TO THIS NUMBER

	A	B	C	D	E	F
(1) Briscoe, Lt.Col. N.B.	1		1			
(2) Bullard, Maj. P.C.	1		1			
(3) Davis, Maj. L.D.	1					
(4) During, Maj. F.	7	31	3	4	2	
(5) Frost, Commander H.H.					1	
(6) Gibson, Lt.Col. A.					1	
(7) Greene, 1st Lieut. J.I.	1					
(8) Guenther, Capt. G.B.	1					
(9) Johnston, Maj. E.S.						1
(10) Lanham, 1st Lieut. C.T.	1				2	
(11) Meyer, Maj. V.					1	
(12) Ridgway, Maj. M.B.	1					
(13) Taylor, 1st Lieut. M.D.	3					
(14) Walker, Lt.Col. E.B.					1	
(15) Willoughby, Maj. C.A.	1			2	2	

A—Foreign-Language Periodicals; B—English-Language Periodicals; C—Abstracts of Foreign-Language Articles; D—Foreign-Language Book Reviews; E—English-Language Book Reviews; F—Original Studies.

Lt.Col. N.B. Briscoe: *Revue de Cavalerie* (May-June, July-August 1934).

Maj. P.C. Bullard: *Revue de Génie Militaire* (May-June, July-August 1934).

Maj. L.D. Davis: *Bulletin Belge des Sciences Militaires* (April, May, June 1934).

Maj. F. During: *Esercito e Nazione* (April, May 1934); *Militärwissenschaftliche Mitteilungen* (April, May, June 1934); *Militär-Wochenblatt* (11 June-25 August 1934, inclusive); *Rivista di Artiglieria e Genio* (March-April, May 1934); *Sanct Christophorus* (January-June 1934, inclusive); *Wehr und Waffen* (April, May, June 1934); *Wissen und Wehr* (April, May, June 1934).

1st Lieut. J.I. Greene: *Revue de l'Armée de l'Air* (April, May, June 1934).

Capt. G.B. Guenther: *Pioniere* (May 1934).

1st Lieut. C.T. Lanham: *Revue d'Infanterie* (February, March, April, May, June 1934).

Maj. M.B. Ridgway: *Revista del Ejercito y de la Marina* (April, May 1934).

1st Lieut. M.D. Taylor: *Esercito e Nazione* (June 1934); *Revista del Ejercito y de la Marina* (June 1934); *Revue d'Artillerie* (April, May, June 1934).

Maj. C.A. Willoughby: *Revue Militaire Francaise* (April, May, June 1934).

Section 1

ORIGINAL MILITARY STUDIES

This section contains original contributions by graduates of The Command and General Staff School.

EVOLUTION OF INFANTRY TACTICS, 1914-1918

By Major E.S. Johnston, Infantry

Historical Facts

1. *a. The infantry of 1914 was announced as the principal arm,* deciding the final issue, and bearing the heaviest burdens of combat.

The infantry thus charged with the most important role in the land forces, was organized into brigades, divisions, and field armies; the division contained three infantry brigades, a regiment of cavalry, an artillery brigade of two regiments, and communication and service troops; the brigade (5676 combatants) included a very small headquarters and three regiments; the regiment (1587 combatants), a headquarters company (staff and mounted orderlies), a machine-gun company (detailed; 4 guns), a supply company, and three battalions; the battalion (579 combatants) a very small headquarters and four rifle companies; the company (three officers and 141 men; 6 pistols and 138 rifles) four platoons of 3 or 4 squads commanded by a lieutenant or a sergeant. For details, see Appendix. Each platoon commander had a second-in-command, platoon guide.

Historically, the American *company* was the smallest unit ordinarily commanded by an officer, and *at once the basic administrative and combat unit;* improved weapons and extended deployment had by 1914 forced the platoon to the fore as the fire-unit. The war-strength company had therefore become in effect, theoretically, a small battalion.

The mounted detachment were scouts, and the band was used as an emergency sanitary detachment.

The *rifle* was the all-important arm, the infantry's only organic means of fire superiority. The *machine gun* was an

emergency weapon to be used as surprise for short bursts before silenced by hostile fire.

The bayonet, or the threat of it, was considered essential to occupation of the hostile position by assault; for night attacks it became paramount.

b. A comparison of the mission, organization, and armament of the American infantry of 1918 may be outlined briefly as follows: General Pershing desired to prepare an integral American force capable of taking the offensive in every respect; this plan was based primarily upon "the development of a self-reliant infantry, by thorough drill in the use of the rifle and the tactics of open warfare." Artillery, aviation, and tanks were the most important of the infantry's necessary auxiliaries. The dictum of 1914 was still in effect in 1918: "modern war requires but one kind of infantry—good infantry."

The organization of the infantry of the American Expeditionary Force (France) was as follows: The division included two infantry brigades, a motorized machine-gun battalion (two companies), and auxiliary units including two light and one medium artillery regiments (in a brigade); the infantry brigade (8,266 combatants) included a small headquarters, a machine-gun battalion (4 companies), and two regiments; the regiment (3742 combatants) included a headquarters, a headquarters company (headquarters platoon, signal platoon including personnel for battalions, a sappers-and-bombers platoon including 6 Stokes mortars, a pioneer platoon, and a 1-pounder platoon of three guns); a supply company; a machine-gun company of three platoons, each of four guns, with mule-drawn carts, and pistols for individual armament (the brigade machine-gun companies were similarly organized); and three battalions; the battalion (1026 combatants) included a small headquarters and four rifle companies; the company (six officers and 250 men) included a headquarters and four platoons; the platoon included a lieutenant, a sergeant second-in-command, 57 other enlisted men, and two half-platoons each consisting of a sergeant and two sections (combat groups). For details see Appendix.

The platoon was designed as the "elementary group in battle," its integrity to be always preserved; the role of its leader was "most important," and his responsibility complete.

Automatic-rifle gunners, bombers (throwers), other specialists, machine-gun personnel, and 1-pounder personnel were armed with the pistol; noncommissioned officers with pistol, rifle, or both; and officers with the pistol.

Tanks were a separate branch.

Individual and team efficiency was the training standard contemplated in all the weapons noted above; but the rifle and bayonet were the principal weapons of the infantry soldier: "he will be trained to a high degree of skill as a marksman, both on the range and in field firing. . . . An aggressive spirit must be developed until the soldier feels himself, as a bayonet fighter, invincible in battle." A new, simplified, and much improved bayonet-fighting system had been adopted from the British. While the new weapons, including rifle grenades, hand-grenades (considered secondary), machine guns, 1-pounders, and Stokes mortars, were receiving attention in training directives, musketry was emphasized in War Department instructions.

The band was still trained as auxiliary sanitary troops.

In general, conditions of stabilization had decreased individual mobility to increase individual and unit fire-power.

2. The provisions of *Field Service Regulations*, 1914, except as modified by specific instructions, were still in effect in 1918 (in fact, until 1923). The 1917 *Infantry Drill Regulations* were similarly in effect in the American Expeditionary Force, except as specifically superseded, until 1919.

Security on the march and at a halt was provided by detachments and formations essentially as now taught (1931).

Reconnaissance by infantry, cavalry, and aviation was prescribed much as in present doctrine, except that up to 1917 no specific means of air-ground liaison were outlined; aviation, in fact, was in a primitive condition in the United States, and there was little experience in its use and practically no tested doctrine.

Prompt action in the meeting engagement, immediate employment of the security and reconnaissance agencies, and early entry into action of the artillery were taught essentially as is now the case.

Withdrawal from action contemplated first the retirement of elements hardest pressed, under cover of reserves occupying covering positions preferably on the flanks, the retirement

being to assembly positions well in rear. Under cover of these security forces, eventually formed into a rear guard, the main body retired in a direction favoring concentration, security, and/or reinforcement.

Delaying action to gain time without serious fighting contemplated the use of strong defensive terrain, thick firing lines, relatively weak supports, long-range fields of fire, and ease in withdrawals.

Delaying action to hold pending favorable developments elsewhere approximated to the defense of a position, which is discussed later.

Energetic pursuit to clinch victory by the use of direct pressure and outflanking forces, and the proper selection of the time to initiate it, conformed essentially to present doctrine.

Night operations were contemplated to avoid loss, effect the approach, gain surprise, and develop the enemy main position; the necessity for control, training, discipline, and the assignment of definite objectives was emphasized. It was considered necessary, however, to confine such operations to small forces; coordination along the front of a division, and coordination of artillery fires with the assault, were considered impossible.

It is evident, therefore, that the doctrine as to the various forms of tactical action, such as pursuit, delaying action, and the like, in its general aspects remained unchanged. It was in connection with forms of attack and defense that the World War had brought about many changes, which are discussed hereinafter.

3. *a.* The 1914 forms of defense included the active and passive; the latter was regarded as impracticable in a position to be held to the last, unless the flanks were impregnable. Consequently *the typical defense*, except for delaying action merely, *had much the primary characteristics of the active defense today*, as will now be demonstrated. Positions were selected to force the enemy to attack in order that he might accomplish his mission; and so that they would afford to the defense a clear field of fire, obstacles, strong flanks, a suitable extent, cover, communications, and protected lines of retreat. They were divided into "sections," and allotted to elements of the command; subdivision was effected in terms of terrain features used as boundaries, to include the foreground. Strong garri-

sons for weak, and weak for strong parts of the line were contemplated. It was considered, however, that an exposed firing line must be relatively thick, even as thick as in attack, while if well intrenched with a good field of fire it could be thinner. The development of fire superiority by proper utilization of the ground was considered essential. A stubborn defense was regarded as requiring a firing line of a density of one man per yard; to gain this, if necessary, companies or platoons were deployed in this manner, with intervals between their flanks. *Long fields of fire were desired,* up to 800 and even 2000 yards. Avoidance of pronounced reentrants prevented hostile enfilade fire, and intrenching was utilized to increase the strength of the position. Discontinuous company-trenches were usual, providing cross-fire, but all-around defense was rarely contemplated. Small trenches, echeloned to the rear, protected flanks.

The "supporting point," organized and occupied by a battalion, was the unit area or basic cell of the defensive system. Distances were relatively short, as 50 to 100 yards from firing line to battalion supports. Supports reinforced the firing line as in attack. Reserves were large, usually about a third of the force, and even in passive defense it was considered that they should be as large as in attack unless the flanks were impregnable. They protected flanks, filled gaps, and executed counterattacks. Supports and reserves were only intrenched if natural cover was lacking; occasionally they provided additional tiers of fire.

Advance positions were avoided as a form of dispersion; small outposts, capable only of observing and warning, were employed.

The brigade ordinarily placed two regiments in line and one in reserve; the regiments disposed battalions similarly; the battalion usually placed three companies in line, holding one in support; the company, unless acting alone, held out no support. By holding out relatively weak supports in defense, battalions occupied wider fronts.

The brigade held not to exceed 1600 yards frontage; a regiment, 500 to 800.

It was expected that at the critical moment supports and reserves would join the firing line in a "counterattack" (actually a counteroffensive) to beat off the attack by an active

defense; local counterattacks to maintain the position were also provided for.

Machine guns, being available only in small numbers as already noted, were regarded as a reserve of fire to be used in emergency, usually under regimental control, not immobilized by assignment to a fixed point; enfilade was desired, and they were employed to protect flanks and cover intervals, being on occasion attached by platoons to battalions.

The 1914 defense is therefore a picture of strong front line, weak supports, strong reserves, weak outposts, little depth, and incomplete organization of the ground.

b. By midsummer, 1918, the defense had been developed in Europe until it has assumed the essential outlines familiar in present doctrine: the various intrenched defensive lines included an outpost line at a varying distance up to several miles to the front, a firing line or line of resistance, a battalion support line, a battalion reserve line, and a regimental reserve line, at distances such as to favor defensive fires, avoid enemy fires directed at other lines, and facilitate counterattack. *Depth was emphasized*, with minimum strength in the front line to minimize effects of enemy fire, and with strong reserves for counterattack. *Long fields of fire were no longer sought;* 200 yards, or less, was considered sufficient. Carefully organized artillery and infantry fires covered approaches, making maximum use of flanking fires. *The development of wire entanglements*, which was the subject of a separate training pamphlet, *had rendered thoroughly organized positions impregnable to the frontal attack of infantry alone. Increase in artillery* power had caused *reverse-slope* positions to be considered preferable, this being usually the case for support and reserve lines, and for the main line of resistance where command and artillery observation were not thereby sacrificed. Artillery development was an outstanding feature of the World War; the numbers of cannon employed on certain occasions were (per 1000 rifles):

	Division	*Corps*	*Army*	*All*
Ourcq (1918)	11.07	6.77	.....	17.84
St. Mihiel	14.37	5.92	1.94	22.23
Argonne (26 September)	12.37	3.10	3.27	18.74
Argonne (1 November)	13.53	3.07	2.31	18.91

All-around defense was an essential to infantry units occupying the various defensive areas. Irregularities in trace were desired as assisting flanking fires, though large salients were avoided. The counterattack was "the soul of the defense," to be planned in advance and launched by proper commanders at the critical moment.

The division usually deployed brigades abreast, each in a "sector"; within the regiment, units occupied defensive areas: the battalion a center of resistance (or supporting point), the company a strong point, the platoon or smaller element a combat group. Reserves were usually, for a regiment, a battalion; for a battalion, one or two companies; for a company, one or two platoons; even the platoon might deploy in depth; the idea of defense on a single line had disappeared. Frontages included up to 800 yards or more for the company, 1400 for the battalion, and 2600 for the regiment.

A second position, 6000 to 8000 yards in rear, and others as required, connected by switches, were characteristic of defense in depth.

Antitank guns for defense were a recent development.

Detailed liaison arrangements with the artillery were essential.

Elaborate arrangements for reliefs of units had become routine.

The machine gun had become the dominant factor in the defense. These weapons were disposed in depth, with special reference to flanking fires. The automatic rifle, also flanking approaches, covered points dead to machine-gun fires; trench mortars fired on enemy personnel, machine guns, one-pounders, and tanks; one-pounders, usually under battalion control, paid special attention to hostile tanks and machine guns; grenades provided close-in defensive fires. Local security was provided by the line of observation in front of the main line of resistance or by the outpost; disorganization of the attack by resistance of the outpost, contemplated in instructions issued by Petain in December, 1917, and thereafter, was to demonstrate its effectiveness in the German Champagne offensive of 15 July, 1918.

In general, these defensive arrangements consisted of maneuverable tactical units deployed in depth in conjunction with as thorough an organization of the ground as time per-

mitted; its full elaboration depended on stabilization, but troops in the open were expected to develop the defensive organization to the extent called for by the situation.

The defense of the Marne by the American 3d Division, perhaps the outstanding American defensive action of the war, affords an interesting example of the 1918 defense: The 30th Infantry, with a wide sector and a foreground exposed to dominating hostile observation from front and flank, employed only two companies, with a complement of machine guns, as outposts along the river, three companies on a main line of resistance about 2000 yards in rear covering the critical terrain of Bois d'Aigrement; all positions were held to the last, and the attack broke down in the outpost area. German reports indicated that the American machine-gun fire was very effective even on the heights north of the Marne. The 38th Infantry of the same brigade held the river bank in strength, employed frequent counterattacks by small units, and also repulsed the attack. Hostile incursions past the flanks to considerable depth failed to dislodge the defense as a whole.

The operation executed by the American 1st Division at Cantigny affords examples both of the use of forward and reverse slopes in defense. Organization of the main line of resistance at the objective on the reverse slope was ordered by division headquarters, the entire foreground being under observation by a division artillery observation post in the Bois de Cantigny; one company, nevertheless, dug in on the military crest, withdrew to the geographical crest, and suffered such physical and moral loss as to necessitate its relief twenty-four hours early.

These examples serve to illustrate the defense in depth, the highly effective marksmanship of American infantry on the defense, and the ability of small units to hold for long periods by all-around defense and the use of frequent counter-attacks.

The defense at Cantigny illustrated the comparative protection afforded by reverse slopes without prejudice to the general conduct of the defense where observation is obtainable from points in rear.

4. *a.* The 1914 doctrine expected decisive results only from the offensive.

Route column being abandoned on entering the hostile artillery zone, each element would develop on a given objective. The mass would be directed on decisive fronts, smaller forces elsewhere executing holding attacks. Opportunity for envelopment would be sought, not only by the force as a whole, but by its sub-units in attacking in particular localities.

The approach from 5000 to 1500 yards from the enemy was in thin lines or platoon columns, not in squad columns, as the latter were too close to each other at a deployment at one man per yard. The first firing position should be well within 1200 yards, and preferably 800; *what was considered the natural instinct of men to stop at a distance to return the hostile fire was to be combatted.* At this position a heavy firing line would be built up at one man per yard or less, to gain fire superiority; commanders allotted fire objectives and directed and controlled the fire. The advance then continued by 25 to 30-yard rushes of elements of from a platoon down to two or three men. Fire superiority was considered the dominant factor, and a system of training in field firing, fire direction, and fire control by signal had been developed from 1911 onward. This advance by fire and movement would be followed when within 25 to 200 (usually 200) yards of the enemy positions, by an assault supported by the artillery as long as practicable; battalion commanders would give the signal to fix bayonets and for the charge, which would be made at a run, shouting. Coordination in time along the front of several divisions was considered impracticable, nor could the time and place of assault be selected in advance; higher commanders must judge where and when to commit reserves and initiate the charge. The artillery would lift its fire on the display of a large flag from the firing line. *The typical attack was not a series of small attacks by the smaller units, mutually cooperating, but an advance to and a charge against a definite line,* followed by pursuit, or consolidation. The assault would arrive at the enemy position "with a united first line and successive supports ready to be thrown into the melee." Initial coordination was obtained by directing a base element to attack when ready, others conforming; or several units might march on a given terrain feature and attack simultaneously; again, units directed on such a point would be ordered to be prepared to attack on

further orders; objectives were allotted in terms of terrain features and by use of the mil system.

Intrenching would be utilized to hold the ground gained.

The American infantry brigade, as late as 1917, deployed with 5000 rifles on a front of half a mile to a mile, in successive echelons in depth, *the firing line at about one man per yard;* the two regiments in assault placed two battalions in the front line and one in reserve at 400 to 500 yards. The result was four echelons: a firing line, to carry the attack close to the enemy; a second line of battalion supports to reinforce it and carry it to assault distance; the third, of regimental reserves, joined the two preceding for the assault; the last (brigade-reserve regiment) was still available for security or pursuit. Front-line battalions held out one or two companies in support at 50 to 500 yards. *Assault companies deployed in one line.* Deployment of the company in depth and the increase of its strength to 250 men were predicted at the Army Service Schools prior to our entry into the World War in 1917.

The *machine gun, a weapon of opportunity,* helped to hold ground gained, protected flanks, and assisted the advance by fire at critical moments for short periods. It was apparently usually employed under regimental control; it was attached to battalions where fire-power was especially needed. On occasion a machine-gun platoon was attached to a rifle company.

The 1914 doctrine recognized the importance of airplanes for reconnaissance and fire adjustment, *but up to and including 1917, the country was practically without military aviation, and substantially without a doctrine for its use.*

b. All training in the American Expeditionary Force was designed to prepare to execute the initial attack against thoroughly organized positions, then against the improvised positions in the enemy's rear area, *and then in the open beyond.* The *last-named* was the *dominating consideration,* and the basis of all training; the Allies, other than the Americans, had been generally pessimistic as to the possibility of achieving the initial break-through; by 12 May, however, Foch was putting this doctrine into effect in his instructions to Allied commanders.

The existing trench system opposite the front to be assaulted was prepared as the base of attack by thorough organ-

ization of observation posts, command posts, communications, and supplies. Under cover of this system, attack-units executed the approach, and formed in their respective zones in close proximity to the enemy. This approach was covered by an artillery preparation supplemented by infantry weapons; the tendency was toward a preparation of four to five hours or less, and if tanks were present it might be omitted entirely. The assault elements were preceded by accompanying fires, usually a rolling barrage and protective fires, while accompanying batteries rendered direct support. Surprise was considered essential. Coordination was obtained by the time element, orders being referred to H-hour and J-Day. *The assault was by tactical units disposed side by side in depth (waves)*, moving at reduced distances in the initial stage to pass quickly the zone of the enemy barrage.

The decisive effort was through enemy weakness or up valleys and ravines under cover of fog or smoke, the units to take advantage of maneuver; elements were to avoid automatic closing up of waves and mixing of units, and to be engaged on orders of their leaders. The deployment was to be usually *at one man per five yards in each wave.* Within the position it was expected that the attack break up into scattered combats of small units; elements would press on through gaps or weakness, and take resistance in flank. Intermediate objectives for the advance were allotted initially down to include battalions. For battalions they usually included the hostile artillery positions; here reserve battalions passed over and continued the advance. Careful plans were made for organization of the captured ground; it was to be held by quick consolidation, and *training in intrenching was considered essential.*

The most detailed and explicit arrangements were made for liaison with the artillery and aviation.

Divisions usually placed two to four regiments in assault, one to two in reserve; the American 1st Division habitually attacked with all regiments abreast, third-line battalions being division and brigade reserves.

Unlike present practice, second-line (regimental-reserve) battalions usually followed assault battalions at a given distance instead of moving by bounds on order.

The battalion deployed on a front up to about 300 yards per front-line company, and was formed in depth, with two or three companies in assault, the remainder in reserve at 200 to 400 yards. The company similarly deployed in depth, one to three platoons in advance, the remainder at 60 to 300 yards distance.

Scouts were to precede assault waves as needed.

Zones of action were narrow in proportion to distance to the objective, the degree of the resistance, and favorable terrain; wide if limited in depth, having unimportant objectives, or directed on objectives to be taken by other units from a flank.

Tanks destroyed accessory defenses, reduced enemy resistance, and acted as an armored accompanying artillery.

Machine-gun doctrine had developed rapidly beginning with the issue of a new manual in June, 1917. The machine gun was expected to prepare the attack and support it by fire; it played an important role. It was also to hold the ground gained. Though fire by direct laying was the primary consideration, the development of indirect laying had made the *machine-gun barrage* possible. The division machine-gun battalion was utilized under division control or allotted to brigades; the brigade battalion was employed as a unit if possible—usually in the initial stages—and companies were allotted to regiments when the nature of the ground or the action called for decentralization. The regimental company was employed similarly. *Opportunities were sought for support by overhead fire and from the flank.* Advancing between assault and reserve companies, the machine-gun company attached to the battalion moved by bounds from position to position. Distribution in depth provided for flank protection; *putting the guns into the firing line was to be avoided.*

On arrival in front of a *new* defensive position, development and attack were executed in much the same manner. If the attack was launched prior to the stabilization of the new front, it had the typical aspects of *open warfare.* Brief orders would be issued to cover the initial phases only. The position would be developed, the outposts driven in, and reconnaissance made by aviation, infantry patrols and raids, ground observation, and cavalry if present. The approach of the main forces to the line thus gained was made under

cover of fire, fog, smoke, or darkness. If tanks were present or artillery not yet up, the artillery preparation might be omitted. The attack was advanced under cover of infantry and accompanying artillery fire as before; liaison with the artillery would be comparatively difficult, and the *rolling barrage rarely used*, the artillery concentrating on points of resistance. Single pieces would accompany the infantry. Assault elements would press on through weakness, and out-flank resistance, prepared to continue the attack with little or no artillery support. Rifles, grenades, automatic rifles, trench mortars, and one-pounders would be utilized to push the attack forward aggressively. The one-pounders would usually be attached to battalions. Their principal role was destruction of machine guns by direct laying. The automatic rifle assisted the assault and held ground gained; the rifle grenade supplemented and on occasion substituted for artillery; the hand grenade was used to reach the enemy at close range under cover.

The War Department in July, 1917, had issued a *musketry manual* including detailed instruction in all its branches, as fire distribution, fire control and direction, target designation, communication, and combat practice. The combat efficiency attained by our troops in this department will be discussed later.

5. The 1914 doctrine contemplated *signal communication* within the infantry brigade by messenger and visual means. Wire and radio were used for transmission over considerable distances; the division field signal battalion included a wire and a radio company for this purpose. The division established wire lines to brigades; the regiment was responsible for communication up to brigade and down to battalions. In 1917, it was contemplated that the outpost company of the field signal battalion maintain communication between regiments and brigade. The location of the commander was always to be announced in field orders.

The 1918 signal communication doctrine contemplated prescription of command posts and "axes of liaison" by the next higher commander down to and including battalions. Means of communication included panels and pyrotechnics for air-ground liaison, telephone, radio, ground telegraphy, pigeons, and runners.

6. *Chemical agents*, in the period, April 1, 1915-July, 1918, had assumed enormous importance; they were employed by the use of gas cylinders, artillery and trench-mortar shell, grenades, and projectors. The British small box respirator and a (reserve) French mask were issued each soldier, and thorough instruction was prescribed in individual and collective defense against gas, including the use of alarm appliances, and protection of shelters, equipment, and animals. Gas officers on unit staffs, and regimental and company gas noncommissioned officers were particularly charged with defensive measures. The infantry was not charged with the offensive use of chemicals.

7. German sources are in agreement with General Pershing as to the physical vigor, the courage, and the *defective training* of the American infantry. The *proper utilization of cover* and of protective formations was often lacking. There was a *general failure to combine fire and movement* in the advance, and *to utilize the rifle, the machine gun, and infantry cannon. Grenades* were found useful, and organizations lacking them admitted the oversight. The tendency was to use shock rather than fire. The *bayonet* was utilized in many widely separated places, and on numerous occasions. *Lack of depth in formation* was also an initial fault, although at St. Mihiel improvement was noted in this respect and as to the use of cover. *Tanks* rendered valuable assistance in several widely separated localities. Generals Foch, Petain, Pershing, and Field Marshal Haig regarded tanks as a primary auxiliary together with aviation and artillery; General Pershing made special efforts to obtain an adequate number, but was unable to do so, because of which fact the losses of our infantry were increased.

The orders issued for the counteroffensive at Soissons within the 1st and 2d Divisions contain little indications of infantry maneuver in terms of terrain objectives: units were ordinarily assigned zones, objectives,, and sometimes directions, but definite schemes of maneuver were lacking.

Certain details to substantiate the foregoing general statements are as follows:

American troops arriving in France in 1918 were generally *poorly trained*, a condition attributed by General Pershing to defective doctrine, and to the *faulty replacement system* in

use in the United States, the blame being laid by him on the War Department General Staff.

American infantry exhibited great *physical prowess, courage, and dash:* German officers of the 84th Division stated their troops harbored a general respect and fear for American infantrymen, who were "strapping young fellows." A German General Headquarters intelligence officer who interrogated prisoners taken from the American 3d Division, expressed admiration for their quality of physique and courage, "which is altogether one whose fighting value will increase with wider experience." The German IV Reserve Corps, on 17 June, 1918, expressed high regard for the morale, courage, and physique of the American 2d Division, stating that its training was still incomplete but that it would develop into a "dangerous foe." General Pershing was proud of his infantry's physique and elan.

As to *training*, there was another side to the picture: German machine guns caused heavy losses to the American 2d Division on 6 June, as its troops advanced in march columns (probably platoon or section columns). The German 1st Battalion, 47th Infantry, on that date, repulsed two American attacks which came over in thick waves. American columns presented advantageous machine-gun targets at close range; about 100 dead were left in front of one company, and prisoners confirmed reports of severe losses. A German General Headquarters intelligence officer, in the same breath, expressed admiration of American physique and courage, and stated that the attack methods used in Belleau Woods were clumsy. German prisoners captured by the 42d Division as late as October had the same essential opinions as to the Americans. At about the same time American "mass attacks" in the Argonne were suffering heavy losses; "single machine-gun nests have compelled entire attacking companies to flee in disorder." The Crown Prince's brother, commanding the 1st Guards Division, with only 500 rifles in line, on 28 September, stated that the American attack formations were poor, their attacks badly planned, their losses severe, but the American tanks were a source of dread and loss to the German defense.

General Headquarters noted a general failure to combine fire and movement, and that heavy casualties resulted from the use of

shock alone.' 'The advance of the assault wave was rarely halted by men stopping to fire; the training to advance steadily behind a rolling barrage, coupled with the offensive spirit and the desire to close with the enemy, probably prevented the better utilization of the fire power of the rifle and the automatic rifle."

As General Pershing regarded the 1st and 2d Divisions as his best, a brief study of their tactical methods during the period about 18 July, 1918, may therefore indicate the best American offensive tactical practice, as opposed to theory, of that time.

During training with tanks prior to Cantigny the greatest difficulty was experienced in inducing the men to utilize cover, and the French liaison officers were emphatic that the advance must be in short individual rushes from hole to hole. The regimental adjutant, observing the Cantigny attack from the observation post, reported the "parade ground" steadiness and alignment of the waves. This was generally true of support and reserves; it was in part true of the assault line, although where special effort had been made to teach the methods of advance from cover to cover, results were excellent, and the leading wave was able to follow the barrage as close as 30 to 50 yards.

A description by an observer in the division observation post at Soissons of attacks by the 1st Division on 20 and 21 July *represents the conventional attack formations as moving forward ponderously with heavy losses against hostile fire, with no apparent effort to utilize cover.* The reader is reminded of the advance under fire of a newly arrived American division, as depicted in the moving picture, "The Big Parade." In another advance with severe losses under fire the officers are described as dashing to the front, and with shouts and gestures leading their units straight into the successive lines of enemy machine guns. That these descriptions are not mere rhetoric may be indicated by a description of the initial advance of the 2d Battalion, 28th Infantry, on 18 July: The regiment had been in France since June, 1917, had participated in the complete American Expeditionary Force training program, had attacked successfully at Cantigny, and now on 18 July attacked on the left of the 1st Division. The 2d Battalion, in assault, carried the first and second objectives in a wild rush to the

Missy Ravine; the men were rarely off their feet; casualties were heavy; the rifle was used freely, but no effort whatever was made to utilize the prescribed musketry methods (and practically no training had been given therein). It was by observation of the Moroccans in this action *that the regiment learned the method of advance ordinarily utilized by the European veterans, whereby the assault line, having lost the barrage, progressed steadily forward, individuals, under the eye of their squad leaders, moving at a run from shell-hole to shell-hole. When stopped by resistance—usually a machine gun—the squad, section, or platoon engaged it by fire from the front, while flankers immediately worked around with rifles and grenades to take it from the flank.* It was a common statement in the 1st Division that the Moroccans taught them how to fight machine guns. *This method of reducing hostile points of resistance* (referred to by Liddell Hart as standard practice in the British Army) *was nowhere adequately treated in our training manuals* until it was placed in the infantry correspondence courses of 1928.

Attack formations were generally too thick; small columns at wide intervals were recommended as more suitable thereafter.

The tendency to attempt to overcome resistance by shock, rather than by fire and shock combined, is sufficiently indicated above.

Yet the fact that mass was no longer a matter of numbers had already been realized by the other combatants. Ludendorf put it that the old principle of mass was now that of means: "success can not be forced by throwing in a mass of troops; this leads to nothing but useless losses; numbers are not decisive; fire is decisive."

The 1914 conception of "building up the firing line" had become passé: Liddell Hart terms it a "murderous phrase," now anathema in the British Army, and *"reminiscent of the old idea of a general fire fight from a definite line preceding a general assault,* (it) seems to overlook *the irregularities of fire and resistance which lead to successive local assaults and the progressive penetration characteristic of modern battle."*

An example of a combination of fire and shock in a difficult situation occurred in the 1st Division at Soissons. A company of the 26th Infantry, having 210 effectives, was held up under machine-gun fire early on 19 July; the enemy

was 300 yards away, with no intervening cover; this unit, and a company each from the 16th Infantry and the 26th on the flanks, charged the opposing machine guns, the men firing from the hip as they ran. The flank companies wavered and sought cover. The center company went on and captured three machine-gun nests; one, with two guns, surrendered without a fight at close range, owing to both guns being put out of order by bullets striking the feeding mechanism; a German machine gun in an abandoned French tank was put out of action by a hand grenade.

It was not until the winter of 1918-19 that the American Expeditionary Force Musketry Bulletins, later embodied in a pamphlet, reached the 28th Infantry, and not till then that a thorough training and inspection program was carried out to effect instruction in musketry and in scouting and patrolling. The division musketry platoon (selected by competition) was entered in the final American Expeditionary Force tests at Le Mans, where the heavy weights allotted to *speed* and *marksmanship*, and the lack of credits for *utilization of the ground and expert battlefield technique in the advance*, placed it under a severe handicap.

The only reference to collective battlefield firing of rifle units in the recommendations of the Lewis Board is to the need of tracer ammunition.

The general failure to realize the need for musketry training until late in 1918 may be due to the fact that, admittedly, the musketry training of the army prior to the World War was not thoroughly standardized.

Grenades and automatic rifles were found useful; General Headquarters noted that *organizations failing to provide grenades felt the lack.*

General Headquarters also noted a general failure, in practice, to utilize the covering fire of machine guns, owing to commanders ordering them to accompany a given wave, rather than to assist the advance by fire. They were at times attached to companies. The guns were therefore not advanced by bounds from position to position, and their losses were heavy. Riflemen detailed as ammunition carriers usually deserted to rejoin their own units. In the 1st Division the machine-gun companies were customarily attached to the same battalions; they were ordered by division headquarters to accompany

the first wave, both at Cantigny and Soissons. It was not until St. Mihiel that orders directed their advance by bounds, and so freed them to execute supporting fires. Much the same errors were made initially in the 4th Division.

In the 1st Division at Soissons, machine-gun companies were attached to infantry battalions; *generally speaking, battalion commanders gave them no definite supporting missions; they simply followed the attacking waves, and suffered heavy losses.* The companies attached to the 2d and 3d Battalions, 28th Infantry, were practically destroyed or dispersed by the time of arrival at the Missy Ravine, where they might have been used to good effect.

In the 2d Division, machine guns were, in general, attached to infantry battalions. The 5th Machine-gun Battalion's companies did not overtake the 9th and 23d Infantry till 6:00 PM, 18 July, and on the next day its companies were unable to find their rifle battalions owing to the confusion. Company B, 4th Machine-gun Battalion (divisional) supported the 9th Infantry with two platoons and the 23d with one in the vicinity of Vierzy at 6:25 PM, 18 July, but delivered little fire. It helped to consolidate the ground. The Machine-gun Company, 23d Infantry, supported the 1st Battalion with one platoon on the evening of 18 July, following the infantry at 100 meters in squad columns, and emplacing the guns to defend the ground gained; its 2d Platoon, attached to the 3d Battalion, followed the rifle units at 400 meters, and assisted to consolidate. Its 3d Platoon advanced by bounds some 500 yards in rear of the right of the regiment, and when the infantry was held up, emplaced the guns to hold the ground. Apparently little fire was delivered.

General Headquarters noted a general failure to utilize one-pounder guns, due to regimental commanders' ignorance of their proper employment. Much improvement was evident at St. Mihiel. Search of the 1st Brigade records reveals no references to their use at Soissons. The 26th Infantry (2d Brigade, 1st Division) made good use of four trench mortars at the Soissons—Paris road until the neighboring battalion commander requested they cease because of drawing hostile fire; they were unable to bring forward all six mortars because of lack of men to carry ammunition. The 28th Infantry made no use of its 37-mm. guns and mortars, leaving them at

Laversine. The evidence as to the use of these weapons by the 2d Division in the offensive near Soissons is negative: it can not be determined how they were employed. It is known that those of the 23d Infantry moved from the Marne by marching instead of by truck, and arrived too late to assist in the attack proper.

Hand-to-hand fighting took place in the Missy Ravine and at Chaudun, as well as on the Ploisy Plateau, and the *bayonet* was used by the 2d Battalion, 23d Infantry, in charging a German battery, the Americans being out of ammunition. An intelligence scout of the 7th Infantry, wounded by a bayonet thrust on the Marne, felt himself in a position to refute the theory that the bayonet was an obsolete weapon.

The *tank doctrine* of the period about 18 July, 1918, recognized that this weapon could replace or increase the effectiveness of the artillery preparation. Tanks would be echeloned in depth, mass against enemy critical terrain, and attached to infantry battalions. They would precede the infantry, leaving concealed positions so as to cross the line of departure at H-hour. The infantry would attack as if no tanks were present, not relying on the tanks, but exploiting their success. Tank commanders were also technical advisors to commanders to whom attached.

Infantry would not hesitate to fire with rifles and machine guns on enemy elements surrounding tanks; they would move to the assistance of the tanks on flag signal, and obtain their assistance by waving a handkerchief, tied to a rifle, toward enemy machine guns holding up the advance.

Tanks did very effective work for the 28th Infantry at Cantigny.

The total tanks assigned to the 1st Division at Soissons did not exceed 57 of the medium (St. Chaumond) type; only about 42, apparently, entered the fight. Of the 48 Schneiders (medium, called heavy) allotted to the 2d Division, 40 appear to have entered the fight. Casualties were very heavy, and effective use was limited in the 1st Division to 18 and 19 July; but in the meantime the tanks had accomplished much: They did effective work for the 16th Infantry, and for the 2d Brigade on 18 July, notwithstanding most of them were knocked out at the Missy Ravine. The Infantry brigade, 11th Bavarian Division, opposing the American 1st Division at Soissons,

estimated at 10:30 PM, 18 July, that attacks of infantry alone could be repulsed, but it was feared that continued tank attacks would be successful. Tanks performed effectively for the 9th and 23d Infantry at Vierzy. The 2d Battalion, 5th Marines, found that too much could not be said in their praise. After they had moved along the edge of the woods near the Paris—Marburgh road, resistance which had held up the battalion ceased, and most of the enemy came out of their dug-outs and surrendered. On 18 July the tanks with the 2d Division lost one machine; on 19 July they lost eleven out of thirty-nine.

At a conference 24 July, 1918, General Foch suggested the importance of tanks in forming the American First Army; Marshal Haig and General Pétain were reluctant to part with any. The lack of heavy tanks forced a longer preparation at St. Mihiel than would otherwise have been necessary. The presence of only eighteen, instead of several hundred tanks for the Meuse-Argonne offensive of 1 November, constituted a "*serious deficiency*"; production at home was too slow, the British needed all their own, and *American losses were thereby increased. In spite of the small numbers available, American tanks in the Meuse-Argonne were the source of terror and of loss to the Germans.*

As to *infantry maneuver* during the period near 18 July, 1918, The 2d Division attacked initially with the infantry brigade on a narrow front, one regiment of the marine brigade on a wide front in woods which skirted the line of departure (the other marine regiment being initially in corps reserve); the infantry-brigade zone rapidly widened within 2000 yards; while that for the marine regiment decreased to a battalion front, and a sharp change of direction at this point caused great confusion in the advance. The various orders issued by the 2d Division for the attack indicate no definite scheme of infantry maneuver. The 1st Division divided its zone equally between brigades, although the fact that the mass of the French XX Corps was on the right and that the shoulder of the enemy salient was near Soissons on the left both indicated that the right brigade, having easiest going, should make the main effort. The left brigade necessarily lagged throughout. On the second day the division artillery massed its fire on this front to bring the brigade up abreast, and this method was repeated on the third. On the fourth a rolling barrage carried

the right brigade forward to the final objective, and the entire artillery mass was thereafter utilized to bring the left brigade abreast. Other than as noted above, *the various orders and accounts give little evidence of definite schemes of maneuver;* the following lists those documents available as to the 1st and 2d Divisions during this period:

1st Division Orders:

Field Order 27, 1st Division, 16 July 18 for attack of 18 July; first-line battalions to take first and second objectives; second-line to take third; no other scheme of infantry maneuver.

Field Order 28, 1st Division, 19 July for attack 4:00 AM: Brigade objectives; no scheme of maneuver.

G-3 Memo 718, 19 July for attack 5:30 PM: includes orders to advance and to maintain liaison; no maneuver.

G-3 Memo 721, 20 July for attack 2:00 PM: objectives given; no maneuver indicated.

G-3 Memo 723, 20 July for attack 4:45 AM, 21 July:

1st Brigade to take a given objective following rolling barrage.

2d Brigade, no barrage; concentrations on Berzy-le-sec (objective); the brigade to attack and when pinched out to assemble.

1st Brigade orders: (no records).

2d Brigade orders:

Field Orders 34, 17 July 18 for attack 18 July: objectives, but no scheme of maneuver.

Field Orders 36, 21 July, for attack 4:45 AM, 21 July: same.

Orders of Infantry Regiments 1st Division:

16th Infantry: none available as to Soissons.
18th Infantry: none available as to Soissons.
26th Infantry: none available as to Soissons.

28th Infantry: Memorandum, Operations Section 17 July for attack 18 July, 1918: the 2d Battalion to reduce first and second objectives; the 3d Battalion to continue the attack to the southeast.

Except as indicated below, the following orders include no definite scheme of maneuver:

2d Division:

Field Orders 9, 30 June for attack on Vaux.
Field Orders 15, 17 July for attack 18 July.
Letter to 3d Brigade, 18 July, 1:30 PM for attack that date.
Field Orders 16, 19 July for attack 6:00 PM.

Brigades of 2d Division:

3d Brigade:

Field Orders 18, 30 June, for attack on Vaux.
Field Orders 22, 17 July, for attack 18 July.
Field Orders 26, 18 July, for attack 6:00 PM.

4th Brigade: no records.

Regiments of 2d Division:

9th Infantry:

Field Orders 15, 28 June (Vaux).
Field Orders 6, 2d Battalion, 9th Infantry, 28 June.
No other records of Soissons operations.

23d Infantry:

Field Orders 43, 30 June (Vaux).
Field Orders 49, 17 July for attack 18 July.
NOTE: *"There was little maneuvering in the sense of outflanking or maneuvering enemy positions. Each unit drove straight ahead."*

5th Marines:

Field Orders ?, 6 June for attack 7 June in Belleau Wood: 1st Battalion on the left to attack in conjunction 116th Regiment; 3d Battalion on right to advance its left along a brook (giving coordinates) in cooperation with 1st Battalion.
Soissons: no records.

6th Marines: no records for period near 18 July, 1918.

The following reports *are negative as* to infantry schemes of maneuver, except as indicated:

Report, 9th Infantry (Soissons).
Report, 3d Battalion, 9th Infantry, 3 July 18, for attack on Vaux: *A nest of seven machine guns in La Roche woods was taken by fire of our machine guns from front and flanking action of bombing squads from Company H.*
Report Company I, 9th Infantry 29 July (Soissons).
Report Company L, 9th Infantry ? (Soissons).
Report Company M, 9th Infantry 11 August (Soissons).
Report 23d Infantry, 4 July (Vaux).
Report 3d Battalion, 23d Infantry, 7 July (Vaux).
Report Company L, 23d Infantry, 3 July (Vaux).
Report 23d Infantry of Soissons operations.
Report 1st Battalion, 23d Infantry, same: a platoon outflanked an enemy strong-point and captured 200 prisoners—*"Our men hav not had sufficient training in reducing strong points and cleaning up woods."*
Report 3d Battalion, 23d Infantry (Soissons).
Report Company K, 23d Infantry, 22 July (Soissons).
Report Company L, 23d Infantry, 22 July (Soissons).
Report Company M, 23d Infantry, 22 July (Soissons).
Report 1st Battalion, 5th Marines, 2 July 18 (Soissons).
Report 2d Battalion, 5th Marines, 22 July 18 (Soissons).
Report 3d Battalion, 5th Marines, 23 July 18 (Soissons); Northeast of Vierzy on 18-19 July after advancing about half a kilometer *"the infantry on my right was held up by machine-gun fire; I stopped my advance and waited until they again moved forward."*
Report 2d Battalion, 6th Marines, 22 July 18 (Soissons).
Report 3d Battalion, 6th Marines, 15 August 18 (Soissons).
Report 74th Company, 6th Marines, 22 July 18 (Soissons).

The following available reports of the 1st Division are also negative:

G-3 Memo 335, 27 July 18 (report of Soissons operation).
Report 1st Brigade, 4 August 18 (Soissons).
Report 2d Brigade, 5 August 18 (Soissons): the attack on Berzy-le-sec is reported herein with reference only to waves, and with no indications of missions allotted to units.
Report 28th Infantry, 26 July 18.
Report 28th Infantry, 4 August 18.

A significant comment exists, made by General Micheler (French) to Brigadier General Heintzelman, United States Army, with regard to the 1st Division terrain exercise held in the Gisors area on 15 April, 1918, prior to entering the line at Cantigny; the General pointed out what was apparently *a complete failure* in the division orders for the attack in this exercise *to indicate allotment of missions according to a definite scheme of maneuver* and after an intensive study of the terrain.

8. *Chemical agents* played a major part in all operations; even during moving warfare they were an important feature. At St. Mihiel gas companies effectively screened the infantry advance with smoke, the extended use of which was recommended.

Discussion and Conclusion

1. *Discussion.—Our 1918 infantry did not hang back from the assault, wasting ammunition at long ranges; rather, it plunged forward, making too little use of fire;* this was due, as indicated by the Infantry School, to *improve discipline* as compared to our previous war-time armies, and also to *defects in technical training.* General Summerall ascribes it to lack of training in combat practice and musketry. This is believed to be correct.

Apart from these special features, the facts speak for themselves, and may be summarized as below.

2. *Conclusion.*—Careful consideration of the foregoing evidence justifies the conclusion that:

Infantry open-warfare doctrine of 1914 and of 1918 were, alike, based on:

Infantry as the basic arm, the rifle-and-bayonet its basic weapon.

Offensive action necessary for success; and open-warfare training dominant.

Utilization of surprise.

The World War developments up to mid-summer, 1918, included:

Great increase in strength of the defensive, due to:

Number and power of automatic arms, and other auxiliary weapons.

Rapid organization of ground, and extended use of obstacles, especially wire.

Increase in power and amount of artillery.

Improved cooperation of infantry and artillery.

Use of tanks, chemicals, and aviation.

Improved signal communications.

The larger American company and the new organization and armament generally had given satisfaction.

Defensive doctrine had undergone no change as to:

The defense a temporary expedient.

Maximum utilization of ground forms and cover.

Allotment of sectors to units.

Use of reserves, especially for counterattack.

But the 1918 defense contemplated:

Organization in greater depth, as to units (including the platoon) and as to additional rearward positions, with minimum garrisons in forward lines.

All-around defense.

Utilization of reverse slopes, and a decrease in necessary depth of field of fire due to influence of automatic arms.

The attack was still based on employment of mass in a decisive direction, and the use of fire and movement culminating in assault.

The attack, however, was now characterized by:

Mass in terms of combat power rather than mere numbers, applied against enemy weakness.

Wider and deeper deployment to include the platoon.

Closer cooperation with artillery, including employment of rolling barrages.

Better coordination.

The role of infantry was unchanged; its mission remained basically offensive and its training primarily for open warfare. It operated in greater depth at wider intervals, and disposed of a wide variety of weapons. It was assisted by tanks, chemical agents, and a powerful artillery.

It exhibited in the period about 18 July, 1918, an *improved battle discipline,* as compared to previous American wartime armies; its *marksmanship was good,* but its training in *musketry, combat practice,* employment of *maneuver,* and the tactical use of its *auxiliary weapons* was so deficient as to greatly increase its losses in the attack.

APPENDIX

ORGANIZATION

Major Features

1914	*1918*
	Infantry Division
	Headquarters And various auxiliary and service troops, including a motorized machine-gun battalion (2 companies) and a trench-mortar battery.
	Two Infantry Brigades.
	One Artillery Brigade, of two light and one medium regiment.
Brigade (5676 combatants)	*Infantry Brigade* (total combatants 8266)
Headquarters (commander, detailed adjutant, aides from division headquarters)	Headquarters (commander, adjutant, and aides)
	Machine-gun Battalion (headquarters and 4 companies)
3 Regiments (totalling 5508 infantry combatants).	2 Regiments.
Regiment (1587 combatants)	*Regiment* (total combatants 3742)
Headquarters (commander and second-in-command)	Headquarters (commander, second-in-command, adjutant, personnel adjutant)
3 Battalions	3 Battalions.
Headquarters Company Commander, regimental adjutant Non-commissioned staff Detailed mounted orderlies Band.	Headquarters Company Headquarters platoon (Staff, orderlies, band) Signal platoon (including detachments for battalions) Sappers-and-Bombers platoon (6 Stokes mortars) Pioneer platoon One-pounder platoon (3 guns) (A Section of 2 Stokes Mortars and 1 one-pounder could be detached to each battalion)
Supply Company	Supply Company (Service elements)

Machine-gun company (detailed) 4 guns	Machine-gun company 3 platoons, each 1 Lieutenant, 46 men 2 sections 4 gun squads (each 10 men) 12 machine guns Mule-drawn carts Men armed with pistol (Organization of Companies of machine-gun battalion similar.)
Battalion (579 total combatant strength)	*Battalion* (total combatants 1026)
Headquarters (commander, detailed adjutant and quartermaster)	Headquarters (commander, detailed adjutant, small clerical force, and signal detachment from regimental headquarters company)
4 rifle companies	4 rifle companies.
Rifle Company (3 officers, 141 men, 6 pistols, 138 rifles)	*Rifle Company* (6 officers, 250 men)
	Headquarters Commander Administrative and service personnel 4 runners
4 platoons 2 platoons of 2 squads each 2 platoons of 3 squads	4 platoons
Platoon Each platoon commanded by a lieutenant, the 1st sergeant, or a sergeant.	*Platoon* Lieutenant, commander Sergeant, second-in-command 57 other enlisted men 2 half platoons sergeant, commander 2 sections (or combat groups)

(THE FOLLOWING RELATES TO THE 1918 ORGANIZATION.)

The first Group, commanded by a corporal, ordinarily consisted of twelve (12) bombers and eight (8) rifle grenadiers. The 2d and 3d consisted each of a corporal and six (6) automatic-riflemen; the 4th included two (2) rifle teams (or squads); each of one (1) corporal and seven (7) riflemen. The group was designed to be a permanent unit, but the half-platoon was to be a flexible organization, permitting of special combinations of groups in any situation. The available bombers of the platoon could be utilized in three teams (leader, scout, thrower, carrier), the rifle-grenadiers as three teams (leader, carrier, two (2) grenadiers), the automatic-riflemen as four (4) teams (of 3 men and one automatic rifle each), and the riflemen in various combinations.

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Section 2

ABSTRACTS OF FOREIGN-LANGUAGE ARTICLES

This section contains abstracts of selected articles from foreign military periodicals. Section 2 is designed to cover articles regarded as important; the remaining articles for each magazine are listed in Section 4.

CONTENTS

	Page
Defense Against Combat Vehicles	35
Russo-Polish War, 1919-1920. Part II	43
Employment of Artillery in an Attack When a Flank is Exposed	48
Maneuver of Demolitions	52
Cavalry Command Post Exercise	76

DEFENSE AGAINST COMBAT VEHICLES

By Major F. During, Infantry

Defense against combat vehicles is a problem of particular interest. The protection of friendly troops against attacks of hostile combat vehicles and the maintenance of one's own freedom of action and movement can be achieved principally by three methods:

(1) By putting out of action combat vehicles and their crews.

(2) By keeping them at a certain distance through barrage fire.

(3) By checking their advance through the employment of natural or artificial obstacles.

The author deals mainly with the first method and mentions the following weapons: mines, hand grenades, aircraft bombs, flame projectors, large caliber machine guns, and artillery.

I.—Combat Vehicle Matériel

The armored units of modern armies are composed principally of tanks and, to a lesser extent, of armored cars.

Combat vehicles may be divided into four different types:

(1) "Accompanying vehicles" or those which act in close cooperation with the attacking infantry.

Abstracted from *Militär-Teknisk Tidskrift för Infanteriet ech Kavalleriet* (Sweden), September, 1933. By Captain O. Ruhtala, Finnish General Staff

(2) "Maneuvering combat vehicles," which operate independently.

(3) "Penetrating vehicles" or heavy combat tanks.

(4) "Tankettes" or light reconnaissance combat vehicles.

In combat all of these types have their special peculiarities and uses which must always be taken into consideration in formulating a defensive plan. In the defense against combat vehicles the following points are of special interest:

(1) Nature of the target presented by the front and sides of the various types of vehicles.

(2) Thickness of the various armored parts.

(3) Speed of the vehicles, obstacle ability, and the manner in which they move during combat.

(4) Armament and fire power.

(5) Formation and groupment of combat vehicles during combat.

(6) Combat missions assigned to the various types.

Accompanying Vehicles

As an example of accompanying vehicles the author mentions the French Renault tank, which is also employed in Soviet Russia and Finland. The vulnerable surface is 2 to 3 square yards from the front, and about 6 square yards from the side. It must, however, be borne in mind that certain portions of the surface are oblique, especially in the front. The chrome-nickel steel armor of the vital parts has generally a thickness of 16-mm. in the older vehicles. In the modern types it is planned to use a thicker armor, particularly in the turret. It may, therefore, be assumed that in a future war the thickness of armor will not exceed 25-mm.

The speed of modern types on level ground may be calculated as a maximum of 13 miles per hour. Taking into consideration the possibilities of observation, it is believed that the speed in combat can not exceed 10 miles per hour. During an attack against defensive weapons the greatest possible speed is used. An attack against infantry is delivered, as a rule, in an *oblique* direction to the target.

During an attack, which takes place by echelons, the tanks attempt to surprise the enemy. Artillery and machine-

gun fire is opened at a range of 250 to 350 yards without reducing the speed of the vehicle. Such fire is intended principally to produce a moral effect and to suppress hostile machine guns. At a range of about 125 yards and nearer aimed fire for effect is delivered. When the vehicles reach the hostile position the most important targets are destroyed in turn. In this case the vehicles move at slow speed and may even halt for a short time (3 to 5 seconds) to produce the greatest possible fire effect. Targets which can not be neutralized rapidly are destroyed by being run over.

Combat vehicles operate habitually in groups of five (platoons) which may be regarded as indivisible combat units. The groupment of combat vehicles during an attack and the distance between them may, of course, vary. In general, the vehicles operate at a distance of 30 to 50 yards between one another and in the center there are three mechanized guns and on each flank, one machine-gun car.

The missions of accompanying combat vehicles are characterized as follows: to prepare the way for the assaulting infantry as far as enemy artillery positions are located, to make breaches in wire entanglements, to suppress and impede hostile fire action, to destroy the hostile troops, and to repulse counterattacks. All this is carried out in close and continuous cooperation with the assaulting infantry and under the direction of its commander.

Particular stress is laid on the fact that the assault against hostile battery positions must be carried out with the greatest possible speed and should be directed against their flanks or rear.

Maneuvering Combat Vehicles

As an example of a maneuvering combat vehicle the author mentions the Vickers medium tank, Mark II. The vulnerable surface in front is about 6 square yards, and on the sides about 12 square yards.

These combat vehicles operate in platoons of five tanks each. Fire is opened in a uniform and concentrated manner against the same targets upon a signal given by the commander. Generally speaking, in combined action with infantry or cavalry the operations are carried on more independently than in the case of accompanying vehicles; this involves also

certain modifications in the problem of groupment. The maneuvering vehicles operate in larger units, usually at least in battalions, of about 60 tanks each. The smallest fire unit consists of two tanks. In neutralizing antitank weapons and artillery, four tanks of a platoon rush at full speed and deliver fire against one flank, while the fifth tank attempts to turn the other flank and to surprise the weapon by running over it.

The missions of maneuvering combat vehicles are: capture of important localities, attack against the enemy's flank and rear, and pursuit.

Penetrating Combat Vehicles

Type V** (France), C-2 (France and Poland), the heavy Vickers (England and Soviet Russia), and Fiat (Italy) tanks are given as examples of this type.

The various types show material divergencies, especially with respect to thickness of armor and speed, as is seen from the table below:

	Armor in mm.		*Speed in miles per Hour*		*Vulnerable Surface in Square Yards*		*Armament*	
	Front	*Sides*	*Maximum*	*Combat*	*Front*	*Sides*	*Guns*	*MG's*
V**	12	8	5	3	7	20	2/57	4
C-2	45	22	5	3	9	35	1/75	4
Fiat 2,000	20	20	5	3	7	20	1/65	7
Vickers	25	25	18	10	10	30	1/47	4

There is a universal tendency, as is shown in the more modern Vickers tanks, to reduce the weight of the armor in favor of speed. Attempts have also been made to increase the range, and the Vickers tank can open artillery fire already at a range of 2½ miles.

Penetrating combat vehicles are employed princiaplly in trench warfare and their mission is to prepare the way for and to protect the infantry, which is making the main effort. They must first of all destroy hostile centers of resistance and obstacles and in special cases important artillery groups.

Penetration combat vehicles pay no attention to infantry during an assault, but operate independently within the scope

of assigned missions, and their combat activities are very much like those of maneuvering combat vehicles.

Reconnaissance Combat Vehicles

The French Schneider and the British Carden-Loyd light tanks (which also exist in the Red Army) are mentioned as examples of this type.

The Carden-Loyd vehicle has a maximum armor of 10-mm. The vulnerable surface in front (to a large extent oblique) is 1.5 square yards and on the sides about 2.5 square yards.

These very light combat vehicles, which are also called tankettes, possess a great speed. The Schneider travels 30 miles per hour on good roads, and the Carden-Loyd at least 24 miles per hour. Combat action reduces this speed, but to a lesser degree in the case of the Carden-Loyd tankette, which has good facilities for observation. The outstanding features of the latter tankette are its great cross-country mobility and on soft surface roads; it has also a relatively good obstacle ability and can cross trenches up to 1.2 yards. The small height of this tankette makes it particularly suitable for reconnaissance. The armament consists of one machine gun.

In general, there are no particular methods of combat action. Tankettes operate, as a rule, in pairs within sight of each other. Frequently they cooperate also with armored cars moving along roads.

Combat vehicles of this type are employed during the various phases of tactical reconnaissance as an advanced weapon of the latter and as a protection for the infantry.

II.—Use of Defensive Weapons Against Combat Vehicles

Combat vehicles have the following characteristics:

(a) Great power of resistance due to the armor
(b) Small target surfaces
(c) Great speed and irregular movements.

A defensive weapon must therefore possess great armor-piercing ability, small dispersion, a flat trajectory, a great rate of fire, and facilities for rapid aiming to the front and flanks.

The tactical characteristics of the weapon—especially its weight and mobility, vulnerability to hostile fire, and the time

necessary to transfer from marching into battery position—must also be considered.

In examining the various defensive weapons of light field artillery, particularly the Soviet 76-mm. gun, models 1902 and 1927, and the French 75-mm. gun, model 1896, used in Poland, the author arrives at the following conclusions:

All these pieces are horse-drawn. On the terrain the crew can shift the model 1927, the so-called regimental gun, only about a hundred yards; the other guns only a few dozen yards. The traverse is limited to 6°; in the latest models, like the Schneider and the Bofors, the traverse has been increased to 40-60°, which has, however, caused a noticeable increase in the weight of the piece.

Of the smaller calibers, the infantry cannon proper—or the "battalion cannon"—is of particular interest. As types, the 37-mm. cannon, models Rosenberg and MacLean are mentioned. Their advantages are small weight and target surface, ease of camouflage, rapid entry into combat, and protection by shields.

Of the smaller caliber defensive weapons the 20-mm. machine gun, model Oerlikon, is mentioned, which will gradually supersede the less powerful machine guns of 12 to 14-mm. The following characteristics are given for this type:

Caliber	20-mm.
Weight in marching position	220 lbs.
Rate of fire	260-300 rounds per minute
Armor-piercing ability	30-mm. armor at about 500 yards 25-mm. armor at about 700 yards 20-mm. armor at about 1000 yards 15-mm. armor at about 1200 yards
Traverse of instruments	16°
Traverse of gun carriage	360°

A description is given of the new British 18-pounder gun mounted on a track-laying armored gun carriage.

III.—Fire Power of Defensive Weapons

Penetration of Armor

The resistance of armor depends, of course, first on its thickness and second on its quality. The latter shows great divergencies and it is likely that such will be even more the case in the future.

The following table shows the maximum range of defensive weapons against combat vehicles:

Combat Vehicles	*Rosenberg in Yards*	*MacLean in Yards*	*Oerlikon in Yards*	*76-mm. Gun Model 1927 in Yards*	*76-mm. Gun Model 1902 in Yards*
Accompanying					
Renault (older models)	500	1000	1200	1500	1500–2000
Renault N.C. 27	.....	300	700	900	1500–2000
Maneuvering					
Vickers	700	1000	1200	1500	1500–2000
TI-22	.....	300	700	900	1500–2000
Penetrating					
V* and V**	700	1000	1200	1500	1500–2000
Vickers, heavy	.....	300	700	900	1500–2000
2-C	.....	.....	200	.....	600

The figures show the penetration of the front armor when the combat vehicle moves straight against the weapon. If the direction of the vehicle forms an angle of 60° with respect to the line of departure, the effect against the side armor is reduced by 20%; there is no effect against the front armor. If the angle is reduced to 45°, the fire effect is confined principally to ricochets only.

IV.—Tactics of Defensive Weapons

Defense against combat vehicles requires a large number of weapons, but simultaneously there should be sufficient "free space" so that the pieces can not fire on friendly infantry. In order to decrease difficulties (the large number of weapons and the concentration of infantry in too small sectors) it is necessary to induce the hostile combat vehicles, by employment of natural or artificial obstacles, to use certain routes of approach suitable to the defender.

The pieces behind a frontal obstacle should be so located as to enable them to take under *flanking fire* the combat vehicles as soon as they pass the obstacle or are immediately in front of it. If such arrangements are made that the combat vehicles are conducted by the obstacle into narrow passages or avenues, the defensive weapons are so located as to

be able to take the vehicles under *frontal fire*. The defense of such a passage requires, however, a larger number of pieces than would otherwise be the case.

The assigned fields of fire are prepared for opening fire. The infantry must be acquainted with them and cautioned not to enter them. If possible, the defender should make use of any natural obstacles. In order to be efficacious, obstacles must be so located as to render possible flanking fire by artillery or large caliber machine guns.

The defensive weapons open fire when the combat vehicles have advanced so near that a reliable fire effect is produced. The distance varies between 500 and 1000 yards, dependent upon the disposition of the piece. As soon as the combat vehicles have come nearer, the rate of fire is altered; it must be materially reduced by the time the combat vehicles open their deadly fire against the defensive weapons which, as a rule, takes place at ranges of 300 to 500 yards.

It is necessary to erect field fortifications in order to protect the pieces and crews from the fire of combat vehicles. They must be well camouflaged, adapted to the terrain, and protected by obstacles both in front and on the flanks. If the defensive weapons are located in an area which can be subjected to artillery fire, there must be also a covered artillery position. However, it is necessary that the weapons are always near at hand. The pieces located farther in the rear can, for example, remain in their battery positions and participate in the ordinary fire missions of artillery; as soon as the assault of combat vehicles is initiated they move to the positions specially selected for combating these.

How and where should the defensive weapons be placed? This depends on the mission in general, the kind of defensive action, and the terrain. It would naturally be advantageous, if such a large number of weapons could be located in the front line as to render impossible an attack by combat vehicles. This ideal solution is, however, thwarted by the hostile artillery, which keeps the front sectors of the position under fire.

Only a smaller number of pieces can thus be located in the front line, and then only if the terrain affords good cover (reverse slopes, clumps of trees, etc.). Otherwise the disposition must be organized in depth and the pieces carefully

camouflaged so that they can not be discovered from hostile observation posts. The disposition in depth reaches from the front line as far rearwards as the artillery positions, since it is the artillery that represents the objective of the penetrating combat vehicles.

Command posts, positions of reserves, and the most important roads must be first of all protected by obstacles and defensive weapons.

THE RUSSO-POLISH WAR, 1919-1920. NONCRITICAL AND CRITICAL VIEWS.*

(PART II)

By Major F. During, Infantry

Commissar Kamenew inspected the Fifteenth and Sixteenth Armies on 20 April, 1920, and, not being satisfied with the measures taken, ordered that in the future all reenforcements be sent to the north group (Sixteenth Army).

On the same date a conference of Polish leaders took place at Molodeczno, during which General Majewski, commander of the First Army, suggested an offensive in the direction of Witebsk and Orscha. This was approved and he was directed to take the necessary steps and prepare plans. At a meeting between Pilsudski and the commanders of the Polish First and Fourth Armies on 11 May, the commander of the latter reported a Russian troop concentration in the vicinity of Witebsk, which clearly pointed to an early Russian offensive. Pilsudski, however, did not share this view and directed the Fourth Army to prepare for an offensive on 17 May, in which the right flank of the Fourth Army was to attack towards Zlobin—Rogaczew. But before the Poles were ready to attack, the Russians commenced their offensive. The Russian Fifteenth Army consisted of nine divisions, the Sixteenth Army of six, and the Group Mozyr of two, while four additional divisions were located between Witebsk and Orscha. The Russian plan provided for the Fifteenth Army, making the main effort, to destroy the Polish north flank and then to drive the Polish forces south into the marshes of

Abstracted from *Militärwissenschaftliche Mitteilungen*, May, 1934. "Der russisch-polnische Krieg 1919-1920. Unkritische und kritische Betrachtungen," by Colonel Alfred von Wittich.

*See RML No. 52, page 43, for first installment of this series.

Pinsk. The Russian Sixteenth Army was to force a crossing of the Berezina and attack in the direction of Igumen in order to keep the Polish in the south from assisting the northern group.

The Russian offensive on the north started on 14 May and drove the Polish Army, which had used all its reserves, to the line: Berezina—Plissa—See—Perebrodje. The Polish high command moved the 17th Division from Lida to Dokoszycy and the 4th Division from Korosten in the Ukraine to Minsk and placed the First Army under the command of General Szeptycki. The mass of the Polish Fourth Army was concentrated on its right (south) flank and could not come to the assistance of the First Army. On 20 May the Russian Sixteenth Army began its offensive and advanced on Igumen.

The Russians reached the line: Zembin—Budslaw—Miadziol by 27 May. A counterattack by the Polish Fourth Army drove the Russian Sixteenth Army in rear of the Berezina again. In the meantime, Pilsudski caused the concentration of the Polish Seventh Army (Reserve Army) under command of General Sosnkowski, in rear of the north flank of the Polish First Army. It was Pilsudski's plan to have General Skierski's group attack from the south and the Seventh Army in a northeasterly direction in order to encircle the Russian forces. But while the Russians were forced back, the encircling did not materialize. When the Poles reached the line: Zembin—Drissa, Pilsudski ordered the advance stopped and the Polish forces took up a defensive position. The first Russian offensive was a failure, but it forced Pilsudski to use all of his reserves and to weaken the Ukranian front by three and one-half divisions.

In the Ukraine a new and dangerous opponent had appeared. A former Russian noncommissioned officer by the name of Budennij had raised a cavalry division with which he defeated Denekin's cavalry in the winter, 1919-1920. After this he raised his cavalry to 4 divisions of 6 regiments each and a special brigade of 3 regiments. This force left the vicinity of Rostow for the Ukraine, and arrived at Human on 27 May. Budennij's cavalry was recruited from Cossacks of all kinds: Kirgbitz, Tartars, Turcomans, and others. They were mostly a wild lot of ruffians and their brutalities and

excesses of all kinds recalled the old Asiatic invasions of past centuries. This force also had artillery, armored cars, and numerous machine guns, and was therefore an army to be reckoned with. Budennij, who possessed remarkable energy and ruthlessness, preferred to attack by surprise and to avoid all loss. He was a master of rapid movement. On the other hand, he was full of caprice and very obstinate. He executed orders and plans only when it fitted in with his own plans. He excelled in raids and against loosely organized Polish cavalry and at the beginning scored success after success. But when his troops met the better organized corps of General Romml, they could not stand the test. Budennij was not trained in the handling of large units. Although he could claim some great achievements, he suffered not infrequent failure.

We find in Budennij an example that daring and will power do not alone make a great leader. At the conclusion of the operation at Kiew, the Polish troops took up a defensive position (see Sketch No. 3). The Poles were short of reserves, especially after several divisions had to be sent to the north front. Why the Poles took up a defensive position at this time can not be accounted for. Perhaps the improperly trained troops did not permit maneuver and open warfare. During the second part of May the Russians reorganized, received reinforcements, and awaited the arrival of Budennij. It was their intention to start the offensive as soon as the offensive in the north came to a conclusion.

The Russian plan was to have its Twelfth Army and the Group Jakir advance on 28 May against the north flank of the Polish Third Army. At the same time the Russian Fourteenth Army was to attack the Polish Sixth Army. The cavalry forces of Budennij was to effect a breakthrough south of the Russian Group Jakir, then turn north and complete the encircling of the Polish Third Army. This plan was unsuccessful. The attack of the Russian Twelfth Army was repulsed on 28 May. Group Jaker advanced as far as Bjelaja Cerkow, but a Polish counterattack on 30 May drove this group back. The Russian Fourteenth Army apparently did not attack at all.

The commander of the Polish troops opposite Budennij ordered the Polish 13th Division to advance, but recalled this order later; this latter order was received only by parts of

the division. So, on 29 May we find several Polish battalions with artillery advancing in an easterly direction, when Budennij's cavalry, without having any information of the Polish troops, advanced on a broad front (see Sketch No. 5). His 6th Cavalry Division successfully attacked parts of the Polish 13th Division and succeeded in creating a large gap in the Polish front and then advanced to the vicinity of Lipowiec. The 11th Cavalry Division was unsuccessful in its attack on Dzionkow. The 4th Cavalry Division took Nowe Chwastow, but a Polish counterattack drove the cavalry back again. The remainder of Budennij's cavalry (14th Cavalry Division and a reinforced brigade) was in reserve.

Instead of exploiting the success of the 6th Cavalry Division, Budennij attacked on the front: Dzionkow—Nowe Chwastow.

Using all available reserve, the Poles were successful in driving back the 6th Cavalry Division on 31 May (see Sketch 6).

The Russian 11th Cavalry Division, however, was able to break through the Polish lines on 31 May and advanced on Kozatin.

During the night, 31 May-1 June, the commander of the Polish 13th Division moved his reserves and forced the Russian 11th Cavalry Division to withdraw. The Polish Cavalry Division Karnicki attacked in a southerly direction, but was forced back by the Russian 11th and 14th Cavalry Divisions (see Sketch No. 7).

Budennij, having concentrated all his mass (unnoticed by the Poles) on his right flank, attacked during the early hours of 5 June with three divisions in front, and one-half division echeloned to his left rear and broke the Polish front. A counterattack by the Polish cavalry brigade was unsuccessful.

In the meantime the Russian Twelfth Army had crossed the Dnjepr River at and south of Czernobyl. This situation placed the Polish Third Army in a precarious position, especially if Budennij followed orders and moved north, but he moved on the railroad center Kozatin and then via Berdyczew on Zytomir, where a Polish Army had its headquarters.

The Russian Twelfth Army advanced very slowly and on 8 June Budennij moved east and instead of meeting Polish forces, ran into the Russian group Jakir. Budennij now

decided to move on his own and advanced in a southwesterly direction on Starokonstantinow. The Polish high command decided on 8 June to withdraw via Malin—Korosten and take up a new defensive position.

The Russian forces did not press the encircling of the Polish Third Army and a radio message to Budennij to change direction and advance against the withdrawing Polish Third Army was executed too late to be effective. The Polish Third Army was therefore able to withdraw in three columns from its position between 11 and 13 June. On 13 and 14 June the south column met units of Budennij's cavalry, but the Polish 7th Division was successful in driving the Russian cavalry off. Budennij ordered a rest for 16 June.

On this day the Polish Third Army took up a position in the vicinity of Korosten, having contacted on the north with the Polish Group Polesie and on the south with the Polish Group Slucz. South of this group was a large gap. The Polish Sixth Army did not start its withdrawal until 13 June, when it withdrew to the line: Mogilew—Bar—Leticzew—Ljubar (see Sketch No. 4). The Russian Fourteenth Army closely followed the Polish Third Army. Budennij's cavalry being reinforced by two infantry divisions, moved on the Polish Group Slucz.

The Russian Twelfth Army took Owrucz on 20 June and crossed the Slaweczna on 22 June and on 23 June drove the Poles about 12 miles south of Mozyr. On 24 June Budennij drove the Polish Group Slucz back, which forced the Polish Third Army to withdraw in rear of the Ubort. Budennij kept on pressing the Poles, who withdrew to the Goryn. The Polish Sixth Army withdrew its north flank to Starokonstantinow. On 26 June the Russian Twelfth Army attacked Mozyr in conjunction with gunboats, which took the town under fire. On 28 June the Polish Group Polesie withdrew in rear of the Ubort and Ptycz.

The Polish high command now replaced General Listowski with General Rydz-Smigly, and command of the group Slucz was given to General Raszewski. Sketch No. 4 gives the situation at the end of June. Pilsudski notified the army commanders and front groups that no more reserves were available and that they had to depend on their own strength.

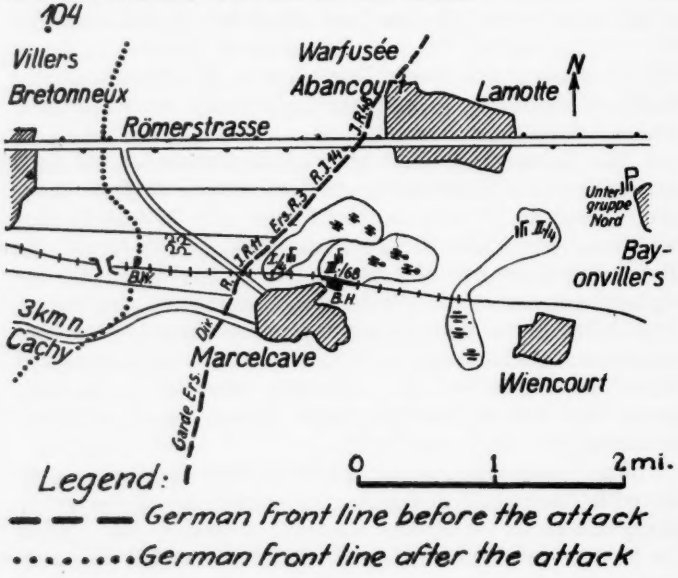
Why did the Poles suffer such reverses in the Ukraine?

In strength, both forces were about even, as was the morale and combat efficiency on both sides. We must look to the high command for the cause of the reverses. It violated the principles that a strategic defense, in order to be successful, must be an active defense, unless the defense is for the purpose of gaining time. (To be concluded)

THE EMPLOYMENT OF ARTILLERY IN AN ATTACK WHEN A FLANK IS EXPOSED

By Major F. During, Infantry

The Michael offensive had come to a standstill. The German high command intended to start a new offensive on the front: Armentières—Kemmel, and in order to divert the attention of the enemy from this front and to deceive the Allies that the Michael operation was not at an end, the German XI and XIV Corps received orders to attack in the direction: Villers-Bretonneux on 4 April, 1918. Römerstrasse was the boundary between the two corps.

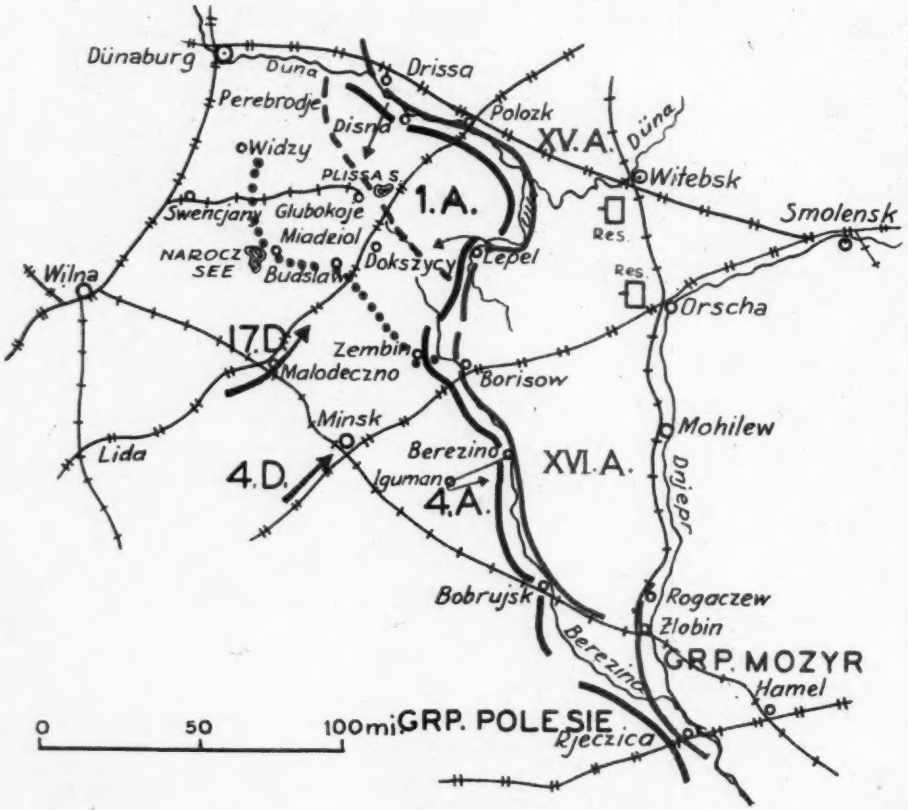


Abstracted from *Militär-Wochenblatt*, 25 March, 1934. "Artillerieverwendung beim Angriff mit nicht angelehntem Flügel." By Major General Feeser, Retired

Sketch No. 1.

FIRST RUSSIAN OFFENSIVE
(14-31 May)

Front Lines on 14 May.
Russian Front on 17 May
Russian Front on 27 May



Sketch No. 2.

POLISH COUNTEROFFE
(1-10 June)

Front Lines on 31 Au
Polish Front on 9 Ju

.2.
ROFFENSIVE
e)

on 31 August
on 9 June

Sketch No.3.
RUSSIAN ATTACK IN THE UKRAINE
(From 28 May)

Sketch No.4
POLISH WITHDRAWAL IN THE UKRAINE
(June 1920)

Sketch No. 5

CAVALRY ACTION-29 MAY

Sketch

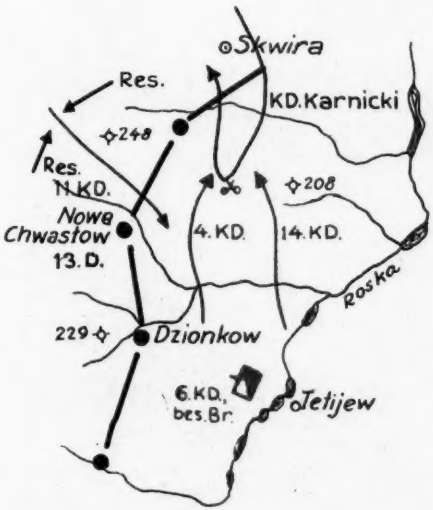
CAVALRY A

Sketch No.6.

LRY ACTION-31 MAY

Sketch No.7.

CAVALRY ACTION-1 JUNE



The objectives for 4 April were limited. Villers-Bretonneux and the woods west thereof were not to be taken. The XIV Corps was to take Hill 104, about 800 yards northeast of Villers-Bretonneux, and the Garde Ersatz Division was to advance from a southerly direction on Cachy. It was believed that the loss of Hill 104 and the town of Cachy would force the French to give up Villers-Bretonneux.

The 9th Division was the right division of the XI Corps. It was in line from the Römerstrasse—railroad crossing about 400 yards northwest of Marcelcave—to about 200 yards south of the railroad. The 48th Infantry was on the right and the Garde Ersatz Division on the left of the 9th Division.

The mission of the 9th Division was to break through the advanced enemy position on both sides of the railroad, advance with a strong left flank against Villers-Bretonneux and to assist the XIV Corps. The hour of attack for the XI Corps was at 6:30 AM and for the XIV Corps at 7:30 AM. The difference in the hour of attack left the right flank of the 9th Division exposed for the time being.

The 9th Division attacked with three regiments in line: 14th Infantry, 3d Ersatz Infantry, and 11th Infantry from right to left, the latter making the main effort on both sides of the railroad.

The artillery was grouped as follows: "Close Range Groupment North," consisting of the 1st Battalion 4th Field Artillery, 3d Battalion 68th Artillery, 2d Battalion 4th Field Artillery. Two platoons of this groupment were held in readiness to be used as accompanying artillery. The 1st Battalion 4th Field Artillery was supporting the 14th Infantry; the 3d Battalion 68th Artillery, the 3d Ersatz Infantry; and the 2d Battalion 4th Artillery, the 11th Infantry.

A "Close Range Groupment South" had its position in the sector of the Garde Ersatz Division and consisted of 2 battalions each of the 7th Garde Artillery and 68th Artillery.

A "Long Range Groupment" (corps artillery of the XI Corps) consisted of 12 batteries (28 high angle and 12 flat trajectory weapons).

The artillery, not having participated in the great offensive of 21 March, was still used to stabilized warfare. The enemy position was not a system of trenches, but a line of outposts with machine guns, whose position was not known.

The artillery had no time to prepare for the attack as it was accustomed to doing, nor had it sufficient ammunition; the positions were not properly reconnoitered; maps were few, and then only for parts of the battle areas. Apparently the high command did not realize this condition of the artillery, otherwise a rolling barrage would never had been ordered. The action of the artillery was dependent upon observation of battery commanders and platoon leaders and of close cooperation and liaison with the infantry. The "Long Range Groupment" had orders to start counterbattery fire at 5:30 AM. The "Close Range Groupments" were ordered to fire on observed artillery preparation from 6:00 to 6:30 AM. During the last 10 minutes of this preparation all guns had to fire as rapidly as possible. The artillery preparation was not to be placed on the front line of the enemy alone, but artillery observers with the infantry could have it changed if they considered a change necessary.

For artillery preparation each battery of the "North" groupment was allowed 150 shells, 100 of which were to be fired during the last ten minutes. We see that for the first 20 minutes each piece fired one shot in little less than 2 minutes. As this fire had to cover a width of about 2,000 yards, it was insufficient to produce a moral effect or cause any losses. The reason for the small allowance for the artillery preparation was the difficulty in getting ammunition from the rear. Each battery had 400 shells, and a promise of getting 200 more, if possible. The first part of the attack went according to plan. No positive result of the effect of the artillery fire is on hand; the enemy artillery fire was effective only at times in the center of the 3d Infantry. The effect of enemy counterbattery and interdiction fires was nil, but the action of the enemy fliers caused the 9th Division some losses.

At 6:30 AM the 9th Division attacked. The 48th Infantry on its right did not attack until 7:30 AM, thus leaving the right flank of the 9th Division exposed. While it was not expected that the enemy would attack this exposed flank, the open terrain, however, favored the effect of the enemy fire on this flank, and it was necessary to prepare countermeasures beforehand.

The protection of the right flank was the mission of the 1st Battalion 4th Field Artillery. Beginning at 6:30 AM, it

placed a curtain fire along the Römerstrasse from 1200 yards west of Warfusée to 2500 yards east of Villers-Bretonneux. Unless the situation demanded the use of the artillery at some other point, this fire was to move 200 yards westward every 2 minutes beginning at 7:30 AM. This mission was a difficult one, but it was solved.

The "Long Range Groupment" placed the mass of its fire in front of the 11th Infantry, on both sides of the railroad. The 3d Battalion 68th Artillery and the 2d Battalion 4th Field Artillery covered the entire front of the 9th Division; the fire advanced by bounds until 7:30 AM, when it reached the east end of Villers-Bretonneux. From 7:30 AM until 8:30 AM it placed a curtain fire at that place.

How did this artillery action effect the attack of the Infantry?

Due to the effective fire of the "Long Range Groupment," the 11th Infantry, making the main effort of the division, advanced rapidly and soon took the enemy position at the railroad bridge 1300 yards southeast of Villers-Bretonneux. At this point, however, strong enemy machine-gun fire slowed up the advance of the 11th Infantry and eventually forced this regiment to withdraw and seek cover east of the bridge.

Enemy artillery fire caused heavy losses within the 3d Infantry; its advance was slow and was stopped completely when it came abreast of the 11th Infantry. The 14th Infantry took all enemy machine-gun nests on the Römerstrasse. When it reported flanking fire from both flanks, especially from its left, the artillery supporting this regiment immediately placed heavy fire on both flanks, thereby reducing the enemy fire considerably. This permitted the 11th Infantry to continue its advance. It came within 400 yards of Villers-Bretonneux, where it awaited the arrival of the 48th Infantry.

From the above we must conclude that the 1st Battalion 4th Artillery, fulfilled its mission completely. The 9th Division did not advance as close to Villers-Bretonneux as it was ordered to do. The attack was renewed three times, but without success, as the enemy executed strong counterattacks. But if we consider that the mission of the Division was to contain the enemy and to divert the enemy's attention from other parts of the front, then we must admit that the mission of the Division was accomplished.

THE MANEUVER OF DEMOLITIONS

By Major P.C. Bullard, Corps of Engineers

In 1917, as the Germans retired on St. Quentin followed by the French army, the latter had a disagreeable surprise upon discovering that its advance was leading it into a zone which had been systematically devastated. The difficulties in supply which were caused by the demolition of the routes of communication, including roads, railroads, and navigable waterways, had a serious effect upon the organs of command and upon the services. Again, in 1918, similar difficulties were encountered in the course of the uncontested march to the Rhine.

Since the World War, demolitions had been considered as constituting an extremely powerful weapon, capable of causing great embarrassment in the movements of an attacker.

In reality, there was nothing very new in the idea of demolitions. Turenne in the Palatinate, and the Emperor Alexander in Russia had previously had recourse to the systematic devastation of large areas. In the World War, the idea of "schadenfreude" (joy at the troubles of others), a conception dear to the Germans, led them to employ demolitions beyond that necessary for military purposes. In carrying out this idea they again demonstrated the advantages of demolitions under suitable circumstances.

It is one of the faults of the French race to be stampeded easily by words and ideas. In 1914, they saw their military elite concentrate their whole theory of military art in the conception of the "offensive at all costs," expecting to execute nothing but attacks, at all price, at any cost. But later, after having at first viewed with contempt the use of fortifications in all its forms, they turned completely around and advocated the "industrialization of the front" by means of such works.

It was therefore natural and normal, after having suffered from demolitions, to stampede after this word. So, at the present time, whenever there arises a difficult problem, we can be sure to see this idea brought forth, a newcomer, in military tactics. We find it, for example, in the contemplated use of extensive demolitions in order to economize concrete work in the fortifications to be constructed along our frontiers.

Abstracted from *Revue Militaire Francaise*, September, 1927. "La manoeuvre des destructions," by Lieut.-Colonel Baills

Accordingly, in order to keep our feet on firm ground, we shall turn to official documents and consider demolitions in the light of various historical examples taken from the World War. A logical study of the French regulations will lead us to conclusions as to the principles and means which should be employed in order to render this weapon of demolitions more available and more effective, especially in destroying routes of communications.

Demolitions

Paragraph 209 of the French *Regulations for Drill and Employment of Engineers* contains the following provision as to the use of demolitions:

> "Demolitions are always involved in defensive situations; they may be used in the following cases:
>
> "(1) In a retirement, in order to gain the time necessary for a regroupment of forces.
>
> "(2) In order to assist in defensive organization of the ground. When they are placed in front of positions they delay the installation of enemy means of attack. When they are within positions they make it difficult for the enemy to pass through.
>
> "(3) In order to cover a flank, for the protection of which the commander can not or does not wish to spare other than small forces."

Concerning the location and preparation of demolitions, the regulations state, paragraph 213:

> "The location of the most advanced line is determined by the nearness of the enemy. The preparation of demolitions is commenced in the most advanced areas."

The character of the weapon of demolitions is thus clearly outlined, as the character of a weapon of maneuver, like the machine gun and the cannon.

Demolitions in the Retirement

In a retirement, as is well known, the machine gun demands the enemy's respect. The Germans demonstrated this in a masterly way by means of machine guns and cannon in 1918, especially after their defeat of 15 July. Demolitions, which were employed by the Germans as skillfully as were their machine guns, enter the picture in order to augment the

delay. In addition, these demolitions are effective as cover for hasty defensive positions occupied by the elements of a rear guard during their successive retirements.

The delaying effect of demolitions is in general passive; it may be made active by use of delayed-action charges. The Germans made extensive use of this method during the war.

In 1918, the Germans, losing confidence in the success of their offensives, and feeling that the entry of the Americans into line would afford to the Allies an indefinite strength in reserves, had foreseen the possibility of having to evacuate northern France and to shorten their front by occupation of the position along the Meuse. They had planned a new operation of the same type as the Alberic Operation of 1917, but one which was still more formidably armed. However, they were unable to execute it completely, because of various circumstances and especially due to conditions of morale.

But the demolitions made between 15 July and 11 November, during the course of the delaying actions conducted by the Germans, were nevertheless such that General Le Henaff was led to write in the *Revue Militaire Francaise:*

> "If the enemy had extended his demolitions for a depth of twenty-five or thirty miles more, it would have caused a complete cessation of all important operations until the spring of 1919."

Now, it is certain that, if the German people had not suffered from the Allied blockade and if the German army, especially in its rear elements, had not been greatly weakened in morale from the same cause, the possibility described by General Le Henaff would have been transformed into reality.

At that time, the contemplated maneuver of demolitions reached the grandiose. It was of a nature to have permitted the Central Empires to continue the war, "of which the art," as Napoleon has written, "consists only in gaining time when one has inferior forces."[1]

The French also had some weak intentions of using this weapon of demolitions. In fact, in February and March, 1918, there had been prepared a superb plan of demolitions in rear of the front: Coucy-le-Chateau—Bapaume, over an area with a frontage of about 50 miles and an average depth

[1]Letter to General Joubert, 29 January, 1797.

of about 10 miles. In the sector of the Sixth Army the demolition of all bridges over the Aisne had been planned. But, as we shall see later, the arrangements for execution were such that they could not be brought into play in a timely manner in case the enemy attacked by surprise.

In the course of the German advances of 1918 the orders issued by the French High Command did not, in general, contemplate the use of prepared demolitions as a factor in the retirement. However, toward the latter part of the German offensive of the Chemin des Dames, attention was finally directed to insuring the demolition of the Marne bridges in order that they might not fall intact into the hands of the enemy.

The use of demolitions by the French Army was not as a general rule any better handled than in this case. But it was due primarily to the fact that the French High Command had to employ them under conditions very different from those under which they were utilized by the Germans. The latter, in one case, devastated the country over a wide area in the course of a maneuver which had been foreseen long in advance (1917), and, in the other case, in course of a retreat (1918) also foreseen in advance and carried on in enemy territory. Such were not the conditions governing French maneuvers during the German offensives of 1918. The French were surprised several times by the German attacks, whose advances were made with such speed that, even if the French had intended to execute demolitions, it would have been difficult to fire them in time without special arrangements. On the other hand, in 1917, the Germans were able to execute their demolitions at leisure, and they never had to carry them out under pressure for there was no combat during the retirement. Nevertheless, the demolitions acted as a delaying element.

As such they deserve to be used as an element of maneuver, since they react upon the time factor.

Demolitions Covering a Defensive Position

Use of demolitions in front of an organized position.—The use of demolitions to cover a defensive position constitutes a maneuver which is really effective, especially when the enemy does not perceive the purpose for which they are being used.

The finest example of the use of demolitions to this end was given by the Germans in 1917. This maneuver is well worth dwelling upon, for it accomplished very great results because of the lack of attention which seemed to have been given to it at the time.

In 1917, the Germans knew that the Allies were preparing to deliver an attack against the Central Powers, whose reserves were weak. The German High Command therefore planned to shorten the French front, retiring to a powerfully fortified rear position. By this operation it could, on the one hand, make more divisions available as a result of the shortening of the front, and, on the other hand, economize forces upon the strong Hindenburg position since the effect of the demolitions would prevent the Allies from rapidly bringing forward and installing the heavy means necessary for the attack of that position, which was concreted and otherwise formidably protected.

Accordingly, with this end in view, the Germans prepared the famous Alberic Plan, and put it into execution at the moment when they believed that the Allied offensive preparations were sufficiently advanced so that the attack might be expected within a relatively short time.

The maneuver commenced by the Germans on 16 March, 1917, did not deceive anyone. It was well understood that the Germans, in thus withdrawing without fighting, were simply economizing their forces. Their manifest purpose was to hold their position upon the Chemin des Dames, and to protect themselves, by means of a glacis of demolitions covering the Hindenburg position, against an attack being prepared by the French Third Army.

Ludendorff, in his memoirs, has well stated the purpose of that operation:

> "The terrain evacuated by us," he writes, "afforded no resources to the enemy. In order to use it, it became necessary to repair the damage done, and the *preparations for an attack required a very great amount of work.*
>
> "The results sought by use of the Alberic operation and the occupation of the Siegfried Position (called by us the Hindenburg Position) were completely attained. Its *favorable influence* was felt for a long time, and we obtained considerable benefit from our retirement."

As a result of this retirement, the Germans succeeded in crushing in the egg a later French attack on the Chemin des Dames, which attack was, furthermore, launched on more difficult terrain. Even if it had succeeded, the problem of communications would have been difficult if the Germans had made a few demolitions.

In that German maneuver, of which the purpose was only too evident, a few observers have professed to see a moral weakening of our adversaries[2], whose tenacity and valor we have, however, learned to appreciate.

The proper counter-maneuver was clearly indicated, to make a great effort upon the repair of roads in order to make them passable to motor convoys. This was possible, as it was principally a matter of main strength and organization. The maximum distance of 28 miles which separated the railheads from the new front of contact should not have been too great to prevent the Third Army's attack from being again prepared. The effort necessary to attain this result would certainly not have been greater than that which had been made at Verdun in March, 1916. However, such a counter-maneuver would certainly have made it necessary to delay the offensive planned for April.

Whatever might have happened in this case, we must remember that the German maneuver of demolitions was particularly effective.

It must be recognized, however, that the Germans did not obtain full benefit from the demolitions which they used on the front of the Third Army in 1917. The demolitions that they had so colossally made were not even defended by rear guard detachments worthy of the name. It is certain that if they had employed bombardment aviation or long-

[2]In fact, a note of General Headquarters under date of 16 March, 1917, gave this impression, as may be seen from the following extract:

"The enemy has adopted new tactics, which consist, at least on a large part of the front, in retreating to avoid the *first shock which he fears.*

"If, when he is established on a new front, we need two months to prepare an attack, it will be playing into his hand. *The time of preparation must be reduced to that necessary to displace the artillery; the above-mentioned period of two months must be reduced to a period of only several days in case it becomes a question of attacking a fortified front,* and in case there is no fortified front then the time must be further reduced to that which is adapted to open warfare.

"All concerned must call upon the whole of their military knowledge, without limiting themselves to those rigid conceptions to which our practice has for so long been reduced."

range artillery to attack French columns, which were scattered and jammed on the roads near the stream lines, the Third Army would have received losses which it fortunately was spared. Any rear-guard action whatsoever would also have considerably delayed the repairs to damaged bridges over the canals and small streams of this region, whereas, on the contrary, the work of repairs progressed rather rapidly and without excessive difficulty.

Except for a few set-backs, it may be said that the reopening of roads for use of animal-drawn traffic was accomplished almost immediately, but since such rapid work is usually poorly done, the traffic gave rise to numerous difficulties. Furthermore, as the roads were everywhere constituted of only a single track, there were constant traffic jams, with the result that movement orders could not be executed. Heavy batteries rarely arrived at the proper time at the locations prescribed for them, and there were units which took 10 hours to travel 3 miles.[3] In fact, no maneuver was possible.

In the matter of repair of the railroads, the demolitions proved to be much more effective, and the track gangs were able to follow the advance at a speed of only 5/8 mile per day in repairing a single-track line.

To proceed farther with the discussion, the German maneuver of demolitions in 1917 also permits us to evaluate in a general way the tactics of this weapon when it is used in front of a defensive organization.

The French attack, or rather their own advance without combat, began on 16 March, and it was only on 20 March that the Third Army obtained contact with the advanced elements of the Hindenburg line and that they commenced to feel any German resistance. In short, the passive resistance offered by the demolitions reduced the French rate of advance to an average of about 3 miles per day. Comparing this with the operation of a later year, when the Germans, starting from the Hindenburg line on 21 March, 1918, attacked the French lines in the same region, which attack died out on 28 March along the new front which had been established near Montdidier. The average daily advance was

[3]Company 14/71 (part of the 28th Infantry Division) left Roye at 2:00 PM, and did not arrive at Sollente until midnight. The distance from Roye to Sollente is about 4 or 5 miles (19 March).

therefore about 3 miles, during which advance the Germans had to fight against the Allied rear-guards and detachments rushed forward by horse or truck. In short, it may be concluded from this comparison that demolitions, by their inertia alone, correspond in tactical value to rear guards which retire fighting.

This tactical value of demolitions is due in large part to the fact that the assailant who is passing through a zone of demolitions can not advance without being suitably disposed for maneuver. In moving his forces into such a zone he does not know whether he will have to deal with hidden enemies lying in ambush. He is obliged to act as though the demolitions are covered by fire, and as a result his advance is considerably retarded. The tactical value of the demolitions will be greatly increased if the demolished zone is gassed with vesicant gas and defended by long-range artillery and bombardment aviation. During the day, the use of these weapons will prevent the movement of marching columns; and at night, movements in a devastated zone are difficult. The use of aviation would evidently necessitate air superiority in a given area, and hence would involve the employment of a large air force. *There is no logical objection to the combination of the two weapons of aviation and demolitions.*

One special case of the use of demolitions to cover a fortified position is that which might occur at the opening of hostilities during the period of concentration or at the beginning of contact.

The commander might plan that one or several armies remain on the defensive on certain parts of the front, in regions where no important network of demolitions had been planned. This was the situation of the German Sixth Army on the Lorraine position. It might even happen that the commander, without having previously contemplated such action, might be constrained to take this attitude as a result of enemy information received during the period of concentration or during the early contacts. The French High Command might very well have operated in this manner when it learned that the Germans were advancing through Belgium.

Recourse might then be had to demolitions. It will be sufficient to utilize large forces of engineers and equipment mounted on automobiles, with the mission of destroying

everything they can within a certain distance (for example, 12 or 15 miles) from the selected defensive position. The work of preparation will be carried out under the protection of large cavalry units, divisions of cavalry, supported at need by units of infantry (battalions or regiments). The demolitions will be fired under cover of the delaying action of these forces. Under such circumstances the purpose of the demolitions would be to gain the time necessary to strengthen the selected position before the enemy artillery could come within reach of it.

It may therefore be concluded that the weapon of demolitions is in certain circumstances a weapon of well-determined tactical value.

Employment of demolitions on an organized position.—As to the use of demolitions within positions themselves, such use raises some particularly fine questions, especially as concerns the actual firing of demolitions on a position in contact with the enemy, and these questions are well worth examining. It must furthermore be understood that we are treating of positions already stabilized, and not positions which have been occupied for only a few days.

A position with which the enemy is in contact may be attacked at any moment. It follows that the explosives and the necessary equipment must be in the immediate proximity of the place of use, and preferably even in the mine chambers. But a position in contact with the enemy is subject to daily bombardment by artillery of all calibers. In case of attack, either this bombardment may be intensified at the time of preparation, or else the enemy assault may be made by surprise. In either case, if our explosives are not in bombproofs they may be destroyed before they can be used. If the attack is preceded or accompanied by a violent artillery preparation, it will probably be impossible to proceed with charging the mine-chambers or to send to each point the men needed to execute the demolitions. If, on the other hand, the attack is launched by surprise, it is equally improbable that the necessary time will be available for charging and firing the demolitions; all the more so as the enemy artillery will enter into action as soon as the attack has been launched. Even admitting that all measures of preparation could be taken and that in spite of the bombardment and in spite of the surprise, it

would be possible to place the charges and prepare the fuses, how can the men charged with firing it, the blaster, receive the order for firing it while the combat is going on and when responsible authority can not render a decision until it is too late?

Enough has been said to show that the question of demolitions within a position in contact with the enemy is of doubtful benefit. It should not be contemplated unless the following arrangements be adopted:

(1) All of the demolition installations must be in bombproofs.

(2) The charges must be permanently in place, with permanent firing personnel authorized to choose the moment for firing the charge (for example, appearance of the enemy at the location of the proposed demolition).

These requirements are unacceptable in actual practice, and, in principle, they condemn the use of demolitions within a position which is in contact with the enemy.

The use of demolitions under these circumstances appears to be limited to the preparation of some charges in the rear part of the zone occupied by divisional sectors, that is to say, in a zone situated, for example, in proximity to the command posts of the divisions. This corresponds generally to a distance of about 5,000 to 6,000 yards from the line of contact of the outposts. At this distance from the front, it might well seem that the local commander (commander of an infantry division) would have the necessary time to give orders for placing and firing the charges provided certain precautions are taken. In fact, in the French and German offensives of 1918, the rate of advance on the first day of battle was such that several hours were always required in order to conquer the first 5,000 to 6,000 yards of the fortified zone. It will probably be the same in the battle of the future against fortified zones, which battle we are at present considering herein. These few hours are generally enough to allow the quick placing of charges, provided all necessary technical preparations have been made in advance. As for the order to fire the charge, it can be given, for example, at the time when the command post is forced to retire under enemy pressure. The experience of the World War showed that a division command post was rarely captured by the enemy. Therefore in giving

the order for firing at this moment, the chances are favorable that the demolitions *will be fired in time.*

Such a conception, however, imposes certain essential requirements as to the permanent method of occupation of the sector and, in certain cases, as to the technique of preparation of the demolitions themselves. If the line of demolitions is not located along a stream, foot troops will have no difficulty in retiring, but such will not be the case with vehicles. It therefore follows that the greater part of the artillery must be placed in rear or in close proximity to the line of demolitions; the remainder, placed somewhat farther forward, will necessarily be sacrificed. As for the other elements on wheels, there will evidently be no difficulty in stationing them in rear of the line of demolitions.

In the exceptional case of demolitions along a rather important stream line, as occurred in the sector of the Chemin des Dames in 1918, the problem appears under a different aspect. After the demolitions have been fired, the foot troops can no longer cross the obstacle. Therefore, to operate in accordance with the plan which we have outlined above would expose them to falling into the hands of the enemy. This is a sacrifice much more difficult to accept than the abandonment of some matériel on wheels. There must therefore be a different plan for firing the charges. The solution consists in providing *defensive blockhouses with permanent security garrisons* at the locations of the proposed demolitions. These would, of course, be bombproof blockhouses. Each blockhouse would be occupied by a combat group prepared to stop all enemy elements of infiltration or any advanced elements arriving at the point of crossing ahead of our last troops. The fact that the enemy, in order to pass, will then be obliged to prepare a local attack against such a blockhouse, will inevitably cause such delay in his advance as will permit us to be sure that all friendly troops either have passed or have been destroyed.

The line of demolitions will thus, in some manner, play the part of a light second position with security garrisons, which it will be difficult for the enemy to outflank and which can stop his advance or at least delay it. Furthermore, this conception, except in regard to the security garrisons, should, it would seem, be used generally in all arrangements for demoli-

tions of bridges in any zone whatsoever. The Germans applied it to several of the Rhine bridges.

If such arrangements had been employed in 1914, they would, owing to the formidable power of the machine gun, have permitted the sure and certain demolition of a large number of structures which actually fell intact into the hands of the enemy.

In the case of certain very important demolitions, arrangements might be made, as was done several times at the end of the war, to have a staff officer posted with the officer of engineers detailed to fire the charge, the staff officer having the authority and responsibility for ordering the execution.

Although all that has been said applies especially to stabilized situations, it is nevertheless possible, in certain terrain and in certain cases, to use hasty demolitions. In soil which is uniform and not too hard, the engineers can prepare mine chambers in a few hours with mine augers. Field works, instead of blockhouses, can also be constructed in a few hours. Therefore, it is seen that we can contemplate a network of demolitions, in certain cases, even during a temporary defensive.

It is a normal condition that a network of demolitions on a position in contact with the enemy should be thin, and this conforms to the great principles of military art. It becomes a sort of *outpost system of demolitions* which is expected only to delay the enemy's progress sufficiently to permit the *main body of the demolitions*, distributed over some 10 to 15 miles of depth, to be prepared for combat. The *main body* of demolitions is designed then to cause considerable delay to the enemy and to permit the defender to *gain the necessary time* for the arrival of reinforcements and the resumption of the fight, which is, as we know, *the purpose of the art of war when one has the weaker forces.*

We thus return to the conception of a main body of demolitions covering a rear position, a conception already studied in Section I.

A particular case of the use of demolitions between two successive positions is that which will occur in the scheme of defensive on very wide fronts at present very much in style in France, a country of low birth-rate. The study of this case is therefore of very great interest.

Demolitions and the defensive on very wide fronts.—In this special tactical situation, it is certain that as soon as the first weakly-held position has been taken and the enemy halts for a short time on the *outpost demolitions*, the commander must try to *bring into play promptly the main body of his demolitions*. He will thus obtain the margin of time needed in order to launch the offensive maneuver which he *will doubtless have prepared elsewhere*, and which offensive maneuver has led him to assume a defensive attitude in this particular region, with units spread over wide frontages.

In such a case there would probably be prepared a powerful *main body of demolitions*, of greater density than could be justified in a defensive sector of normal frontage.

It is certain, for example, that if the sector of the Sixth Army at the Chemin des Dames, which was held with divisional frontages of 9 miles, had been organized from the point of view of demolitions as we have indicated above, the Germans would probably not have been able to pass the Aisne.

Now, considering demolitions from the tactical point of view, under what conditions and to what extent can the defensive be used over very wide fronts? But, from the purely tactical point of view, it seems that in widening the frontages of large units we have already reached the limit, due to questions of command, and that we can not go further unless command is decentralized and a certain amount of independence is given to subordinate units, to regiments for example, by attaching to them units of all arms of strength sufficient for the defense of the fronts assigned.

If it be understood, and such appears normal, that demolitions can be used with a view to extending defensive frontages still farther, thanks to the delaying action of these demolitions, still we can not unduly decrease the density of occupation of a position in contact with the enemy. Such position, in advance of the line of *outpost demolitions*, at first serves to cover this latter, then, in combination with it, serves to cover the main body of demolitions and to make possible their *timely execution*.

Let us make the reasonable supposition that between the time when the army commander obtains a clear idea as to the strength and importance of the enemy's attack and the time when the main body of demolitions is ready to come into

play, there will be a lapse of 5 to 6 hours. This lapse of time fixes the period during which the first position, combined with the outpost line of demolitions, must last. Now it seems that a well-fortified position, organized for a depth of about six or even seven thousand yards, as we have seen (but variable in depth according to the frontage), ought to last 5 to 6 hours if it is occupied with the density usually provided for an outpost in open warfare, and if it is properly supported, furthermore, by several battalions of machine guns and several battalions of artillery in addition to the organic means. This is a question of tactics which we do not pretend to solve, but it is still not without interest.

In fact, the *occupation of defensive sectors with very wide frontages will be possible only when the general system of demolitions (outpost and main body) has been established, and all personnel and matériel have been prepared for the charging and firing of the demolitions.* If the commander is in haste to utilize this type of defensive, he must call upon the general reserves of engineers and auxiliary workmen, including civilians; he will organize them into veritable divisions of workmen which, under the direction of the engineers, will be able with surprising rapidity to execute a general program of demolitions over wide areas.[4] This conception of the use of demolitions does not, as might appear at first sight, exclude their use in rapid maneuvers. With soil which permits mine augers to be used in the preparation of mine chambers, the commander can, in a few days, develop a system of demolitions sufficient to afford him temporary defensive security in some sectors of the front while he is operating offensively at other parts of the front.

But such a rapidly-installed defensive maneuver of demolitions will be exceptional only, and *can not be contemplated except in very special soil and probably only in very limited areas.*

If we summarize all that we have said concerning the use of demolitions within organized positions which are either stabilized or in process of becoming stabilized, we reach the following conclusions:

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[4]The Germans were able to prepare the demolitions for the Alberic Plan in a period of five weeks. This figure gives a general idea of the time required in an operation of this nature.

(1) In positions in contact with the enemy, a shallow barrier of demolitions at the rear of the position. Charges under bombproofs, with material, explosives, and personnel in immediate proximity to the proposed demolitions; the arrangements for important demolitions protected by fortifications with permanent security garrisons. This whole constitutes the outpost system of demolitions at the disposal of the infantry divisions in contact with the enemy.

(2) On the glacis of the selected rear position, situated some 10 to 25 miles in rear of the former, should be the main body of demolitions. Preparations not under bombproofs and not protected by works of fortification except in the most important cases (decision of the commander), all being grouped tactically and technically into zones. The responsibility of firing the charges will be committed either to the commanders of the army corps, or the commander of the army, or to persons delegated by them.

This conception of the use of demolitions is capable of being adapted to very varied military operations, as far as the circumstances of time and place permit.

Thus, for example, their employment to cover a flank can very well be contemplated. We are thus led to study the third case stated in the engineer regulations.

Use of Demolitions to Cover a Flank for the Protection of Which the Commander Can Not or Does Not Wish to Spare Other Than Small Forces

This case, in fact, partakes of the character of the preceding one and must be treated in the same manner, account being taken of the factors of time and means.

As early as 1914, in the first Battle of the Marne, if General von Kluck had believed in the weapon of demolitions he could have used it to advantage on the evening of 8 September or on the morning of 9 September in order to cover his left flank while he was out-maneuvering the French Sixth Army.

On 6 September, von Kluck moved his IV Corps towards the north through la Ferté-sous-Jouarre; then on 7 September the III and IX Corps were moved through Charly, Chézy, and Château-Thierry. These two latter corps crossed the Marne on 7 and 8 September on the bridges situated to the

west of Château-Thierry (inclusive), opening a gap of about 20 to 25 miles in the German front, towards which gap marched the British Army. The defense of this gap was confided to a force of cavalry supported by elements of infantry and artillery, but which was *cut in half* by General von Quast, commanding the IX Corps, *on his own initiative*. These troops had the mission of holding the Marne between la Ferté-sous-Jouarre and Nogent-l'Artaud, *of destroying all of the bridges*, and of holding the north bank of the Marne until such time as a decisive success was obtained at the right flank.[5]

However, the greater part of the demolitions was not carried out because the company of pioneers attached to the brigade of Kroewel, which was responsible for the defense, did not arrive on the scene.[5]

In view of the importance of destroying the Marne bridges between la Ferté-sous-Jouarre and Château-Thierry (inclusive), it is difficult to understand why von Kluck did not *detach some engineers from the III and IX Corps* as they crossed the Marne on 7 and 8 September in their march to the north; this action would have insured the preparation and *timely execution* of the demolitions. Now, it develops that the British III Corps was stopped until the 10th in front of la Ferté-sous-Jouarre, where the bridges were destroyed, while, on the other hand, the I and II Corps were able to cross the Marne on the morning of 9 September on bridges which they found intact, and it was the sight of the British to the north of the Marne on the morning of the 9th which was one of the determining causes of the retreat of the First and Second German Armies.

In fact, General von Bulow writes in his memoirs concerning the Battle of the Marne:

> "*At that moment* there remained no doubt in my mind that the retreat of the First Army had been rendered inevitable as a result of the tactical and strategical situation, and that the Second Army was also forced to retire in order to prevent its right flank from being completely turned."

It is probable that if the bridges between la Ferté-sous-Jouarre and Château-Thierry (inclusive) had all been destroyed, as they should have been (that is to say, if General von Kluck

[5] *Der Marnefeldzug*, by General von Kuhl

had thought sooner of the demolition of the bridges), the British I and II Corps, in company with the III Corps, would have been forced to mark time between la Ferté-sous-Juoarre and Château-Thierry.

Von Kluck would then have had time to complete the defeat of the French Sixth Army, which had already been beaten by him on the afternoon of 9 September, and, maneuvering by interior lines, he would then have been able to turn against the English while they were in the act of attempting the passage of the Marne.

No one can say what might have then been the effect on the outcome of the battle.

In any case, this example shows perfectly that the commander must attach to the weapon of demolitions the same importance as to the other weapons, and it shows how this weapon can be used to protect a flank where only weak forces can or should be placed.

Turning to 1918, during the development of the attack of 15 July, the Germans do not seem to have contemplated a maneuver of demolitions on the defensive part of their front that was opposite the forest of Villers-Cotterets. It is not understood why, after having reaped such benefits in 1917 from the rational employment of demolitions, they omitted to make use of them in this case. The pocket to the south of the Aisne had been stabilized long enough to permit the Germans to prepare a defensive cover of demolitions on its western face. This cover might very well have been of less extent than that which they had used in 1917; yet, if it had been well established with its lack of depth compensated by a greater density of demolitions and by greater size of individual demolitions, the protection thus obtained would have considerably embarrassed General Mangin's offensive. It seems that this omission on the part of the Germans should be attributed both to an excess of confidence in the success of the new attack planned and to the lack of sufficient means for preparation of such an operation on the Alberic type at the same time as the offensive.

Be that as it may, these examples illustrate in a striking way how a flank can be covered by demolitions under suitable circumstances.

Remarks and Suggestions

In the course of this study on the use of demolitions in maneuver, we have many times emphasized the fact that this weapon is handicapped by the difficulty of establishing liaison between the commander and the blasters at the precise time when the former desires the demolitions to be executed.

This difficulty raises a question of liaison and of signal communications of the same type as the difficulties which are encountered during battle in the operation of communications between the various command agencies and the combatant troops. But, while in the latter case the lack of liaison can frequently be compensated either by maneuver or by the initiative of the various intermediate commanders who are always more or less in contact with the situation and who have reserves at their disposal, such is not the case with the demolitions.

We find here only two organs, first, the organ of command, more or less high in the hierarchy of command depending upon what delegation of authority may have been made, and, second, the man who fires the charge. If the liaison does not function, the blaster is left to his own initiative. And then one of two things may happen: if it develops that the decision which he makes (to fire the charge or not to fire it) is favorable to the operations, he is congratulated and decorated; if the contrary is the case he is exposed to condemnation and punishment. Now, most often the action of the blaster when he is without orders is a matter of chance alone; at the moment when he has to make his decision he is almost entirely ignorant of the situation and of the advantages and disadvantages of firing the charge.

The lack of communications is all the more to be feared the nearer the demolition is to the enemy and the farther away is the officer qualified to give the order for firing.

It was this difficulty of communication that caused most of the bridges of the Aisne to fall into the hands of the Germans on 27 May, 1918. In the case of some bridges, although the charges had been placed as early as six o'clock in the morning (in particular in the sector of the IX Corps.), they were not fired because the orders of execution from the commander of the Sixth Army were not received; in the case

of other bridges, the charges were still in process of being placed when the Germans reached them.

But, on the other hand, from 28 May onward, the greater part of the bridges not already held by the Germans were demolished, not on orders from the army, but as a result of a delegation of authority to subordinate commanders.

After having seized the Aisne bridges, the Germans continued their advance towards the Marne. The French commander then turned his attention to preventing the capture of the bridges over that river, and on 30 May he sent the following orders for the defense of the Marne bridges:

> "1. The order has been given to defend the bridges; they will therefore be defended. It is only *in case this defense becomes impossible* that authority will be given to destroy the bridges between Verneuil (inclusive) and Chartiers (inclusive).
>
> "2. At each bridge, the *officer responsible for its defense* will make the necessary dispositions to destroy the bridge as soon as the *first enemy* reaches it; if necessary he will blow himself up with the bridge."[6]

This document is of interest from several points of view. It brings out the advantage of having the arrangements for each demolition *protected by concrete*, first, because the concrete would afford protection to the detachment assigned to defend the bridge and to fire the charge; and second, because it would make it possible to withhold the actual blasting, without the preparations being subject to destruction, until the first enemy reached the bridge or other important structure.

Besides, to state that the appearance of an enemy upon the bridge should determine the moment of firing would leave an initiative to the blasters which might be dangerous. It can be taken for granted that a man acting under such orders would execute them blindly, so much the more so as he would be under a nervous strain. Thus there is a risk of premature execution of the demolition. It would seem much better to dispose of small forces of the enemy by a few good machine guns under concrete protection and to execute the demolition only when the enemy is ready to attack in force. The prelude to the attack will be marked by use of artillery and of infantry accompanying weapons against the concrete.

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[6]This is reminiscent of the energetic attitude of Jean-Bart.

However imperfect the above orders, the bridges of the Marne were all destroyed in time, though that of Verneuil was destroyed under peculiar circumstances. The story of this latter is worth telling, for it leads us to certain conclusions.

The preparation for the destruction of the bridge at Verneuil were made on 31 May. A staff officer was detailed with the officer of engineers who was responsible for firing the charge, the staff officer having the mission of giving the order to fire the charge *when he should consider that the right time had come.* The charges on the Verneuil bridge were placed in the open air. The enemy bombarded the bridge several times, and the bursting shells repeatedly cut the lead wires. After having several times repaired the wires, the engineer officer became anxious and stated that he could no longer take the responsibility for the proper functioning of the demolition. The staff officer, without further reference to the general situation, which he probably knew no better than did the engineer officer, gave the order to blow up the bridge. Yet the Germans were still some distance from the Marne.[7]

Besides, it is probable that in most cases the presence of a staff officer, even bearing instructions of the commander as to the action to be taken in case the commander's orders should not arrive for blowing up the bridge, would be insufficient to determine the proper time for execution. In fact, in the height of battle, the communications between the officer charged with a zone of demolitions and the blasters will be somewhat subject to interruption. The staff officer himself, in case the orders of the commander do not arrive, must take the responsibility upon himself in accordance with the instructions which he has received. Now, either these instructions will be very vague, as often happens when the instructions apply to a future situation unknown to all, and then the staff officer will be in complete uncertainty, as is the chief of the zone; or else these instructions will be precise, the situation which they contemplate will never occur, and

[7]According to the testimony of General Normand. However, the documents of the Historical Section say that "Verneuil (village) fell into the hands of the Germans between 10:00 and 11:00 AM. The bridge at Verneuil, which had been very heavily bombarded by large-caliber artillery and *was being approached by the enemy*, was blown up toward 11:00 AM. (History of the Operations of the 1st C.C., May and June, 1918.) Verneuil is about a half mile from the bridge.

the staff officer will again find himself in uncertainty. We know that in war it is very rare that operations develop in the way that they are planned by the commander. It is normal that they work out differently, and it is almost always the unforeseen which must be faced.

But even supposing it might happen that the staff officer has an intuition as to what should be done in a situation with which he is not familiar, still his communications with the blaster run the risk of not operating; it will then be necessary that the blaster also be furnished with instructions as to what to do in this case. Then the following question arises: "Under what circumstances can the blaster assume that the communications are no longer in operation?" Furthermore, the same question arises in the mind of the staff officer with regard to his communications with the commander.

We consider, however, that the presence of the staff officer is useful because it relieves the blaster of responsibility. In this regard the following example is typical:

After the German attacks of March, 1918, which pushed our lines back to the south of Noyon, the general commanding the engineers of the Third Army had prepared numerous demolitions on the bridges of the *Oise* and of the *Lateral Canal between Noyon and Compiègne.*[8]

In expectation of new attacks, which began on *9 June*, the demolitions had been charged, and selected men, all belonging to a company of miners of the army engineers, were stationed near each proposed demolition, with order to fire it on *written orders* of an officer of the company, that is, of an officer *well known* to all of the men; this officer was himself permanently stationed with the commanding general of the division, who had been given authority, by the commanding general of the army, to issue orders for the demolition of the bridges. In order to transmit these orders, the officer at division headquarters had with him two runners per demolition, each of whom was to follow a different path, which he had reconnoitered and followed several times in advance both by day and by night. The precautions therefore seemed entirely adequate.

[8]Extract of a conference by Colonel Macaire at the Cycle d'Instruction du Génie in 1922. Colonel Macaire was with the Third Army at the moment when the events in question occurred.

In the orders handed to the leader of the detachment (noncommissioned officer of engineers, a good technician, but evidently not very military) there had been placed a provision that, in case of absence of written orders, *he should execute the demolition upon the close approach of the enemy.*

What happened? *One night* the enemy launched a very violent attack in the vicinity of a very important bridge over the Canal, at Chiry-Ourscamps, to the south of Noyon. The leader of the detachment observed Moroccan troops retreating in great disorder. They announced in broken French that the Germans were behind them. Great perplexity! How could he know if the enemy were approaching, in the darkness of the night, in the midst of a gas bombardment which forced him to wear a gas mask? He could not leave his post to obtain information. A lieutenant also passed, this one was French, and confirmed the statement that the enemy was approaching. The sergeant fired the demolition, which incidentally killed a noncommissioned officer who was passing nearby. Next day, charges were preferred against him by the commander of the army corps, because he had blown up the bridge prematurely and had thus deprived our front lines of a very important means of lateral communication. But, after inquiry, it developed that the enemy had actually reached a point just beyond the bridge though afterwards thrown back by a counterattack.

By presenting these arguments and by making it clear that if this chief of detachment were found guilty and condemned, no other bridge would be blown up, the general commanding the army engineers succeeded in having the charges withdrawn.

And several other structures were actually destroyed in a very timely manner upon the close approach of the enemy, *but none of them on written orders.*

Who would dare to assert that even if a staff officer had been with the blaster, things would have happened otherwise in the case which we have just narrated. It is in fact doubtful if the staff officer would have had sufficient knowledge of the general situation in the course of a *night attack* to have rendered a decision upon as sound a basis. He, like the noncommissioned officer, would have found himself fighting with his nerves and would probably not have done any better in the

execution of an order which was as vague as that of directing him to blow up the bridge upon *the close approach of the enemy*. The "close approach" is a convenient expression but is lacking in the precision necessary for such a case.

In fact, that solution, many times adopted in 1918, has not solved the problem. It does not therefore seem that the presence of a staff officer suffices to solve the difficulty of determining the proper moment for firing the demolition.

A satisfactory solution can only be reached on condition that *sure and certain communications* are maintained, on the one hand between the staff officer and the commander who has authority to order the demolition, and on the other hand between the staff officer and the blaster.

Thus arises the problem of communications, and we finally come to consider a radio network for the system of demolitions, with a central station for each group of demolitions and a receiving station near each demolition.

Such a conclusion is inevitable, but the problem is not thereby simplified unless the preparations for demolition are so arranged as not to be damaged in case of enemy attack. It would be possible, it is true, to limit the radio system to the most important demolitions. This conclusion naturally leads to the conception of firing the charge by distant control, which would permit the commander himself to fire any charge at a time chosen by him.

Though the technical problem to be solved is unquestionably difficult, it is not impossible. Such a radio system for *firing demolitions* would certainly be dangerous in the present state of science, for, in spite of all precautions, the enemy might himself fire the charges. But science has not said its last word, and who knows if the problem shall not be solved some day by completely taming electricity, light, or heat. The solution will also involve special arrangements of charging, in order to prevent an enemy from disarming the charge *before* the commander has fired it. These latter are technical questions much less difficult to solve than is that of communications.

Without further pursuing these suggestions, it may be understood that, when a system of demolitions can be operated upon such a basis, the system will require nothing more for firing than the presence of the chief at the central station

established for the distribution of firing orders. He will then be able to employ any maneuvering combination which he judges useful, and to play with the weapon of demolitions more easily than with the other arms because it will be constantly in his hand. In any case, the chief himself will have the whole responsibility for the decision taken without it being necessary to blame or to praise the poor blasters.

If it happens that a charge explodes after the enemy has taken the structure, the enemy will have the disagreeable surprise of having the explosion under the feet of his columns. Besides, his fear that such might happen will exercise a weakening influence on his morale. We have all known the anxiety of commanders of all grades upon advancing and occupying the installations abandoned by the Germans. What officer of engineers has not been called upon to test or sound walls, dugouts, signs, shelters, and roads with a view to finding the enemy's delayed-action traps?

Conclusion

In the course of this discussion, we have tried to show how demolitions constitute a powerful, formidable weapon in the hands of the commander, as in the case of the other arms.

In the present status of development of the means of firing, the handling of this arm requires high qualities of coolness and skill. The effects of demolitions are often double-edged unless, as for the Germans in 1917, they are used in a preconceived maneuver that has been prepared during a considerable period in advance and forms part of a general plan.

However, progress in the science of signal communications ought to let us hope that we may soon be able to handle this arm with a suppleness that, especially in defensive situations, will make it a particularly formidable weapon.

While waiting the development of these desiderata, we must nevertheless continue our peacetime study and *use of this weapon which, associated (as we have said) with fortifications and concrete, will often permit us to accomplish important demolitions at the right time, neither too early nor too late.* It will also furnish our bombardment aviation and long-range artillery with human targets at points where the enemy's routes of communication are forced to pass.

A CAVALRY COMMAND POST EXERCISE

By Lieutenant Colonel N.B. Briscoe, Cavalry

The purpose of the exercise was to bring out the (1) reconnaissance, aerial and terrestrial, of a cavalry division and the advance to combat, particularly of its motorized elements; (2) employment of the reconnaissance groups of the army corps and the infantry division.

The program included:

The putting in motion of a cavalry division having first a mission of reconnaissance and later one of security on the right wing of an army; the approach to the enemy and the entry of the mass into action; the action of a corps reconnaissance group; and the action of a division reconnaissance group.

All general officers having cavalry commands, a reduced staff for each of the five cavalry divisions, all commanders of cavalry division artillery, motorized units, dragoons portée, and motored machine guns, about half the commanders of horse regiments, and other officers from General Headquarters and the Schools took part in the exercise.

The terrain chosen for one phase favored motors, while in another phase it was unfavorable.

The exercise was carried out on the basis of actual tables of organization and existent matériel. Possible or projected matériel was not assumed.

One side was commanded by the generals, in turn, the opposing side by the Commandant of the Cavalry School. Other officers had appropriate commands on one side or the other.

The Red side consisted of one cavalry division reinforced by a regiment of armored cars from general reserves.

First phase.—In order to delay the arrival of Blue troops on the Blue right flank, the Red cavalry division was given the mission to reconnoiter and attack the Blues as soon as possible. In case of an attack by superior forces, the Red cavalry was to delay the enemy and to cover the left of the Red Army.

Second phase.—The Red Army, having completed its concentration, and having nothing but armored-car patrols

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Abstracted from *Revue de Cavalerie*, March-April, 1934. "Un exercice de cadres de cavalerie sur le terrain."

in front of them, decided to send out the "reconnaissance groups."

Reconnaissance

We find orders subject to "interpretation." Orders to push reconnaissance to a given line "before noon 20 June" brought varying results, some starting immediately and going as far as possible before dark the 19th, while others started the morning of the 20th.

It was found that the depth limit of aerial reconnaissance (division) was 65 miles; it was also found to be bad practice to give two missions of an entirely different nature to a pilot. It is best to give one mission to one pilot on one trip.

It became necessary to establish a terminology for the air missions, viz., "reconnaissance by army," and for division aviation, "scouting mission" and "supporting reconnaissance detachments."

In the terrestrial reconnaissance several points were noted:

(1) The mission, the distance, and the terrain determine the employment of motorized detachments.

(2) A cavalry division should have two armored-car squadrons and each armored-car platoon should have four cars capable of furnishing two patrols.

(3) Army orders for reconnaissance should not be too detailed. Cavalry has intermediate and incidental missions of its own.

(4) Phase lines must be within the capabilities of the troops. Reconnaissance is not effective at night, especially when the enemy holds a river line.

(5) Reconnaissance detachments should have zones of action rather than axes or routes.

(6) Detachments march in the usual manner, attempting to pass the flanks of opposing groups while containing them in front.

March of the Division

The mission was such that the division had to march along a fixed axis rapidly and ready for combat, always prepared for offensive or defensive action as circumstances might require. This required careful study of terrain and possible enemy actions.

The march formation was in two groups, one group having the motorized element, and the other the animals, each marching in two columns.

The 105-mm. portée, matched neither the speed of the motor column nor that of the horse column, so it travelled at the head of the trains.

The motorized elements were send ahead some 35 miles late in the afternoon and covered the march of the horse units, thus permitting the latter to make the maximum speed during the night and to have the entire force assembled again before daylight.

The division commander controlled the itinerary, the composition of the columns and, particularly, the place of the artillery, thus being prepared for prompt action according to his plans.

The division, being on the flank of an army, had one exposed flank, and as the enemy had motorized groups, it became necessary to consider these groups when the disposition for close-in security had to be planned.

The "distant security" was not satisfactory, orders lacked precision, and missions of reconnaissance and security were intermingled. Security detachments at a distance of 15 to 18 miles were operated in the area of ground reconnaissance. The chief trouble was disproportion between motorized means available and the multiplicity of missions, causing dependence upon small motorcycle groups posted at barricaded road centers.

Contact and Combat

Contact was first made by armored cars, and the situation developed so rapidly around the advanced motorized group that an attack planned for the 21st was launched late on the 20th by the horse brigades.

Four points were noted:

(1) Launching an attack consists essentially of: giving a direction; arranging the troops on this direction, facing their objectives; gaining at the critical point, superiority of fire; machine guns must be well forward.

(2) The attack is a progression in the direction given—it is movement.

(3) More care is necessary in applying artillery support for cavalry, advantageously for the units fighting on foot.

(4) Making contact by "partial action" most often results in a premature and profitless expenditure of means, and frequently hampers later action by the division commander.

Corps Reconnaissance Group

This exercise was intended to draw attention to the importance and weight of missions that can be given to a corps reconnaissance group, and to the technical conditions of its employment.

The I Corps had its reconnaissance group, which was the sole unit possessing sufficient mobility and suitability of organization to carry out missions of security, liaison, and advance occupation of terrain at a day's march in front of the advance guards.

The army situation developed so that the cavalry was wholly occupied on the flank, and it was necessary for the advancing corps to cover their own fronts.

This meant reconnaissance on the front and right flank. The cavalry was some distance away, too far for the security of the I Corps. It was suggested giving the flank mission to the reconnaissance group of the 1st Division, but this was not satisfactory as the distance was too great for the divisional group. It was needed for close-in work. The frontage to be covered and the distances involved required the addition of a battalion of infantry in trucks. It is noted that the headquarters of a corps reconnaissance group is relatively heavy in order to allow for handling of such additional strength.

Division Reconnaissance Group

The division planned to have its reconnaissance group operate 8 to 10 miles in advance of the advance guards. A division group may operate under the orders of the advance guard commander. The bounds for the group must be prescribed as carefully as those of the advance guards, and time and space to accomplish their missions must be considered. The orders must prescribe their conduct in case contact is made with the enemy.

In the execution of its mission the division reconnaissance group had to reconnoiter a zone 4 to 6 miles wide and to

occupy eventually certain designated points; this necessitated sending a large part on reconnaissances and on patrols, at the same time holding the mass on the axis of the march of the division.

The author concludes:

(1) That the cavalry division (1932) is a strong unit, capable of rapid displacement, of great radius of action, well armed with automatics, capable of performing under all circumstances the mission of reconnaissance, security, and combat. It needs more armored cars and combat cars, some howitzers, partly motor-drawn to accompany the motorized elements, antitank and antiaircraft weapons, and bridge material. In spite of the diversity of its components, it is supple and easily handled and can be massed under any conditions. The combination of motorized and horse units, far from weighing it down, gives, by reason of the different speeds, a maneuverability not possessed by similar units of uniform speed.

(2) The reconnaissance groups possess the same characteristics as the cavalry division.

(3) The command must always keep in mind the idea of maneuver. The Blue cavalry division had to maintain a position between its own army and the enemy cavalry. The Red cavalry division had to find means of approach for attack of the Blue army flank. Blue succeeded by constantly maneuvering.

(4) The place of motors and horses in march and in maneuver can not be prescribed in regulations; each situation calls for a different disposition. When motorized units make contact and the horse units come up, the former should be relieved in part in order to build up a mobile reserve.

(5) Movements are made by bounds; cross-country motor vehicles remain on roads to the last minute and avoid groupings which are subject to fire.

(6) Distant reconnaissance is a function of armored cars, and at the same time these cars should act as security for horse columns; *it is up to the armor to receive the first bullets.* However, it would be a serious error to consider the horse solely as a means of transport for fire power.

(7) Security from enemy armed vehicles must be gained by *distant security* detachments, 18 to 25 miles away, and advance notice (reconnaissance) is the crux of the security.

(8) It is not always possible to hide from enemy aviation, but a formation of many columns creates uncertainty as to the direction of effort.

(9) The small amount of artillery causes maximum employment of machine guns and armored vehicles in order to be able to mass the artillery fire at the desired point.

(10) Cavalry must be imbued with the ideas of mobility, wide movements, the gaining of time, not being stopped by obstacles but getting around them by employing wide and rapid maneuvers.

Section 3

DIRECTORY OF PERIODICALS

Included in this directory are only those periodicals from which articles have been selected.

See also, Section 8, "List of Periodicals Indexed and Key to Abbreviations."

MILITARY AND NAVAL PERIODICALS

Joint Forces

Army and Navy Journal 85
Army and Navy Register 85
Army, Navy and Air Force Gazette (Great Britain) 86
Fighting Forces (Great Britain) 95
Journal of the Royal United Service Institution (Great Britain) 95
Journal of the United Service Institution of India (Great Britain—India) 96
Revista del Ejercito y de la Marina (Mexico) 114

General Military

Army Quarterly (Great Britain) 87
Bulletin Belge des Sciences Militaires (Belgium) 87
Canadian Defense Quarterly (Canada) 91
Esercito e Nazione (Italy) 93
Militärwissenschaftliche Mitteilungen (Austria) 96
Militär-Wochenblatt (Germany) 101
Revue Militaire Francaise (France) 129
Sanct Christophorus (Germany) 133
Wissen und Wehr (Germany) 136

Arms and Services

Air Arm

Revue de l'Armée de l'Air (France) 116
Royal Air Force Quarterly (Great Britain) 133

Artillery

Coast Artillery Journal 92
Field Artillery Journal 94
Journal of the Royal Artillery (Great Britain) 95
Revue d'Artillerie (France) 118
Rivista di Artiglieria e Genio (Italy) 132
Wehr und Waffen (Germany) 135

Cavalry

Cavalry Journal 92
Cavalry Journal (Great Britain) 92
Revue de Cavalerie (France) 123

Chemical

Chemical Warfare Bulletin 92

ENGINEERS

Military Engineer....110
Pioniere (Germany)....111
Revue du Génie Militaire (France)....128
Rivista di Artiglieria e Genio (Italy)....132
Royal Engineers Journal (Great Britain)....133

INFANTRY

Infantry Journal....95
Infantry School Mailing List....95
Revue d'Infanterie (France)....125

MEDICAL

Military Surgeon....110

ORDNANCE

Army Ordnance....86

QUARTERMASTER

Quartermaster Review....114
Royal Army Service Corps Quarterly (Great Britain)....133

SIGNALS

Signal Corps Bulletin....135

Navy and Marines

Marine Corps Gazette....96
Naval Institute Proceedings....110

GENERAL PERIODICALS

Annals of the American Academy of Political and Social Science....139
Foreign Affairs....139
Foreign Policy Association: Foreign Policy Reports....139
Scribner's....140

Section 4

CATALOG OF SELECTED PERIODICAL ARTICLES

This section catalogs the articles selected from Library periodicals for the current quarter. Periodicals in this Catalog are arranged alphabetically.

ARMY AND NAVY JOURNAL

4 August 1934

(1) ARMY PROMOTION STUDY
(2) PREPARE TO CARRY OUT AIR RECOMMENDATIONS

11 August 1934

(3) EXPECTED RETIREMENTS WILL SPEED PROMOTION

25 August 1934

(4) AIR OFFICERS ON GENERAL STAFF
(5) THE FOUR ARMY ORGANIZATION AND ITS RELATION TO THE COMMAND POST EXERCISES
(6) RESERVE OFFICERS MANUAL
(7) PREPARE FOR G.H.Q. MANEUVERS

1 September 1934

(8) THE GHQ MANEUVER SITUATION
(9) ROLE OF THE GHQ AIR FORCE IN THE MANEUVERS
(10) CAVALRY IN THE MANEUVERS
(11) ALASKAN FLIGHT MAKES FINE RECORD

8 September 1934

(12) GHQ MANEUVERS

15 September 1934

(13) ARMY GHQ MANEUVERS REVIEWED AT MONMOUTH
(14) PRESS SEES NEED FOR LARGER ARMY IN VIEWING COMMAND POST EXERCISES

22 September 1934

(15) LONGEVITY PAY
(16) INCREASE WEST POINT AIR TRAINING
(17) EXAMINATION FOR PROMOTION
(18) ARMY WARRANT APPOINTMENTS

29 September 1934

(19) VULNERABILITY OF AIR DEPOTS AND FACTORIES
(20) EMERGENCY PLANS FOR DOMESTIC DISTURBANCES
(21) TRAINING OF RECRUITS

6 October 1934

(22) ARMY PROMOTIONS AND RETIREMENTS
(23) A COLLEGE OF NATIONAL DEFENSE

13 October 1934

(24) CHAIRMAN MCSWAIN'S PLANS
(25) RESTORATION OF FULL PAY SCHEDULES
(26) CONTINUATION OF THE CCC
(27) TO FIRE 16-INCH COAST ARTILLERY RIFLE

20 October 1934

(28) FUTURE OF THE ARMY AND THE CCC
(29) REPORT ON ARMY TRAINING SYSTEM
(30) NATIONAL DEFENSE DEPARTMENT AND DEFENSE STRATEGY
(31) THE ARMY RATION
(32) WAR-TIME RANK PROBLEMS

27 October 1934

(33) THIRD CORPS AREA MANEUVERS. Major General Malone
(34) SALES PLAN FOR OFFICERS' AUTOS
(35) NEW LEAVENWORTH POLICY
(36) SEEK INCREASE IN NATIONAL GUARD
(37) THE GENERAL COUNCIL AND ARMY PROMOTION
(38) THEODORE ROOSEVELT AND NATIONAL DEFENSE
(39) NEW COMMISSARY ACCOUNTING SYSTEM

ARMY AND NAVY REGISTER

4 August 1934

(1) ARMY PROMOTION SITUATION
(2) AVIATION AND NATIONAL DEFENSE
(3) AIR CORPS IN ARMY ORGANIZATION

11 August 1934

(4) NATIONAL GUARD, RESERVE, AND CIVIL AVIATION
(5) ARMY RENDERS SERVICE

18 August 1934

(6) OUR PLAN OF NATIONAL DEFENSE
(7) ARMY PROMOTION
(8) POLITICAL SAPPERS OF DEFENSE

25 August 1934

(9) ARMY MANEUVERS
(10) PROMOTION IN REGULAR ARMY
(11) C.C.C. ACTIVITIES

1 September 1934

(12) ARMY MANEUVERS

8 September 1934

(13) THE ARMY ALASKAN FLIGHT
(14) LONGEVITY PAY
(15) THE ARMY MANEUVERS

15 September 1934

(16) ARMY PROMOTION SYSTEM

22 September 1934

(17) METHODISTS OPPOSE R.O.T.C.
(18) CONSTRUCTION WORK IN HAITI

29 September 1934

(19) ARMY EXTENSION COURSES
(20) CHAMPIONS NATIONAL DEFENSE

6 October 1934

(21) AIR FORCE ORGANIZATION

13 October 1934

(22) THE WAR DEPARTMENT

20 October 1934

(23) NATIONAL GUARD AFFAIRS
(24) CIVILIAN CONSERVATION CORPS

27 October 1934

(25) NAVAL AVIATION
(26) CIVILIAN CONSERVATION CORPS
(27) FOREIGN SERVICE ASSIGNMENTS
(28) READJUSTMENT OF CAVALRY PACK LOAD

ARMY, NAVY AND AIR FORCE GAZETTE (Great Britain)

26 July 1934

(1) THE SYSTEM OF PROMOTION IN THE U.S. ARMY. Major Meyer
(2) PROSPECTS OF THE FORTHCOMING NAVAL CONFERENCE. By "Navalis"

9 August 1934

(3) THE MILITARY IMPLICATIONS OF FASCISM. Major General Rowan-Robinson
(4) THE AIR DEFENCE DEBATE

16 August 1934

(5) THE MYSTERY OF THE "SECRET GERMAN PLANS." Major Murphy
(6) THE PROBLEM OF MANPOWER. Fayle

23 August 1934

(7) THE FAILURE OF DISARMAMENT CONFERENCES. Captain Spicer

6 September 1934

(8) THE DEFENCE OF INDIA. Captain Davies
(9) AUSTRIA'S MILITARY FRONTIERS. (I) Lieutenant Mast
(10) THE FUTURE OF THE NAVY IN VIEW OF AIR DEVELOPMENT. Oberlieutnant Feuchter

13 September 1934

(11) COMBINED OPERATIONS IN HISTORY
(12) THE MYSTERY OF THE "SECRET GERMAN PLANS." Letter to the Editor

20 September 1934

(13) COMBINED OPERATIONS, 1934. Captain Kennedy
(14) SECURITY. Ferrero

27 September 1934

(15) SALISBURY PLAIN MANOEUVRES. (I) Captain Kennedy
(16) GAS REQUIRES A NEW DEFENCE CORPS. Major Murphy
(17) U.S. ARMY AVIATION. Bridgman

4 October 1934

(18) SALISBURY PLAIN MANOEUVRES. (II) Captain Kennedy
(19) AIR FORCE RE-EQUIPMENT. Bridgman

11 October 1934

(20) THE NEW ZEALAND MILITARY FORCES—PERIODICAL NOTES. Lieut.-Colonel Smythe
(21) AUSTRALIAN AIR DEFENCE. Expansion of the R.A.A.F.
(22) SEA POWER IN THE MODERN WORLD

18 October 1934

(23) THE PROBLEM OF A SUPER-NATIONAL POLICE FORCE. Major-General Fuller
(24) SEA POWER AND AIR POWER. Air Commodore Chamier
(25) THE ITALIAN MANOEUVRES, 1935

25 October 1934

(26) MILITARY SIGNALS IN DEVELOPMENT OF CANADIAN NORTHWEST TERRITORIES. (Canadian Correspondent, Ottawa)

ARMY ORDNANCE

September-October 1934

(1) MUNITION MAKERS AND COMMON SENSE. WITH AN ACCOUNT OF WAR-

TIME BOMBING IN THE BRIEY DISTRICT. Nickerson

(2) RECAPTURE OF WAR-TIME PROFITS. PRICE CONTROL AND TAXATION THE ONLY EQUITABLE METHODS. Baruch

(3) WAR OF TOMORROW. EFFECTS OF PROGRESS OF THE PAST TWENTY YEARS. Colonel Lull

(4) THE STORY OF THE CONFEDERATE COLT. Steuart

(5) SUPERVISION OF THE TRADE IN ARMS. THE PROPOSED CONVENTION AS CONSENTED TO BY THE U.S. SENATE

(6) FACTS ABOUT MUNITION MAKERS. An Editorial

ARMY QUARTERLY (Great Britain)

October 1934

(1) HINDENBURG. BY ONE WHO MET HIM AS AN ARMY CORPS COMMANDER

(2) THE COOPERATION OF TANKS WITH OTHER ARMS AT THE BATTLE OF CAMBRAI, NOVEMBER, 1917. Part I. Major-General De Pree

(3) THE STRANGE CASE OF GENERAL MICHELER

(4) MILITARY OPERATIONS IN DAGHESTAN, 1917-21. Part I. Allen

(5) "THE OTHER SIDE OF THE HILL." NO. XIII. THE FIGHT FOR ZONNEBEKE, 26TH OF SEPTEMBER, 1917

(6) ENTHUSIASM AND ALL THAT. THE COMMANDING OFFICER. Major Wardle

(7) HOW TO TRAIN NON-COMMISSIONED OFFICERS TO BECOME LEADERS. Brigadier Brooke

(8) THE MENACE OF WAR IN THE FAR EAST. Brigadier-General Bruce

(9) SEEING AHEAD. Captain Sheppard

(10) THE LAST LINK IN THE PUZZLE OF THE MARNE, 1914. THE REARWARD COMMUNICATIONS OF GENERAL VON KLUCK'S ARMY DURING THE BATTLE

(11) THE SALAMANCA CAMPAIGN, 1812. AN ILLUSTRATION OF MODERN IDEAS. Captain Thorn

(12) THE AUSTRIAN OFFICIAL HISTORY. Vol. IV

(13) COLONEL WILLIAM HICKS. Warner

(14) SAND-TABLE CONSTRUCTION. Captain Drummond and Sergeant Stevens

(15) THE EPIC OF TREE HILL PIQUET. Captain Macdonald

BULLETIN BELGE DES SCIENCES MILITAIRES (Belgium)

BY MAJOR L.D. DAVIS, INFANTRY

April 1934

(1) PAGES D'HISTOIRE DE L'ARMÉE BELGE AU COURS DE LA GUERRE 1914-1918.—L'ATTAQUE DE L'ABRI DU GRAND-PÈRE. [History of the Belgian Army in the World War. The attack of the strongpoint at Grand-Père.] Lieut.-General Baltia

(2) COMMENT FAUT-IL MONTER UN EXERCICE DE MÉCANISME AVEC CHARS AU CAMP DE BEVERLOO? [The purpose of the demonstration exercises with tanks at Beverloo.] Captain Vandereycken

A description of three demonstration exercises carried out by infantry companies and tanks, illustrating the conduct prescribed for these arms by the official regulations governing infantry-tank cooperation, the exercises being staged to demonstrate both to the participants and to observers the correct technique.

(3) AIDE-MÉMOIRE DU CHEF DE SECTION DE MI. EN OFFENSIVE. [A guide for machine gun section leaders.] Lieutenant Melon

(4) COOPÉRATION DES ARMES. [Cooperation of the arms.] Major Sottiaux

This article concerns only the cooperation between infantry and artillery. The author discusses the necessity of registration and adjustment fires by the artillery, their effect on the element of surprise and on the degree of promptness of entry into action. He concludes that for modern combat the artillery must improve its technique so as to reduce to the utmost the preliminaries necessary to insure accurate firing.

(5) LA DÉFENSE CONTRE LE PÉRIL AÉRIEN. [The defense against air attack.] Captain Calberg

(6) LA JURISPRUDENCE EN MATIÈRE DE PENSIONS D'INVALIDITÉ DU TEMPS DE PAIX. [The law concerning pensions for disability in time of peace.] Captain Temmerman

(7) CONTRIBUTION À L'ÉTUDE DES ABRIS DE FORTIFICATION. [Contribution to the study of fortification shelter.] (I) Captain de Greef

This is a technical discussion of the specifications and construction of steel reinforced concrete shelter against artillery shelling and aerial bombing.

(8) ETUDE SUR LE TIR FUSANT. [A study of time fuse firing.] Captain Molinghen

(9) LES PROCÉDÉS FRANCAIS D'ATTAQUE DE L'INFANTERIE JUGÉS PAR UN ALLEMAND. [The French method of conducting the infantry attack as seen by a German.]

This is a review of an article by a German writer in which the latter points out for his readers the essential differences, as seen by him, between the French way of attacking and that used by the German army. He points out that the French lay most stress on fire superiority, on insuring their own security; whereas the Germans lean strongly toward developing and depending upon the offensive spirit, viewing firepower as merely a supporting factor to assist the infantry in its advance to close with the enemy.

The author discusses at length two important elements in the French system of infantry attack: the PLAN OF FIRE and the FIRING ECHELON. His description would fit very well for one of the American Army's method of FIRE AND MOVEMENT. The author notes that the difference between the French and German infantry attack is found in the different interpretation of the word "maneuver," which he states means to the French the action of conducting the means of firing to a new location from where the fire-support will be more effective; whereas to the German the word conveys the action of the troops themselves moving against the enemy.

The author concludes that the French system will take more time and consequently may on occasion miss the opportunity for nailing down a successful attack, which result could have been accomplished under the German method, which is characterized by rapid and energetic action. He thinks the French system has the usual weakness of all highly systematized methods, in its vulnerability of being completely crippled by a hostile reaction. On the other hand, he admits that the French method is clear and easy to understand, wherein it possesses a great advantage to the non-professional soldier, with possibilities of resultant gains in improving battlefield cooperation between the arms, and in the lessening of useless losses in the infantry.

The Belgian reviewer very correctly observes that the conclusions of the author place in strong relief the differences that have always existed in a force composed of short-term soldiers and one made up of men engaged for long-time enlistments during which training and instruction may be carried on over a period of years.

(10) INSTRUCTION PROVISOIRE POUR LES UNITÉS DE DRAGONS PORTÉES. [Provisional instructions for the portée dragoons.]

The new Regulations state in a foreword:

"The units of the dragoons equipped with cross-country vehicles for the transportation of the unit (dragons portées) are characterized as are other units of the cavalry, by firepower combined with mobility. They possess great speed and an extended radius of action, as well as a powerful armament of automatic weapons and ample means of communications.

"They are particularly suited for employment directly with other fast moving elements (auto machine guns, motorcyclists, motorized artillery). At once flexible and powerful, they can be employed in battlefield combat either on a broad or a narrow front.

"Those units transported on camionettes are not so mobile. Nevertheless, their vehicles which are an integral part of the combat unit, endows them with flexibility and a considerable degree of mobility.

"However that may be, the employment of the portée dragoons, with their many means, illustrates the intensified application of the traditional powers of the cavalry; it requires of officers and men the highest qualities."

The organization of the portée dragoons is given as shown below:

The COMBAT GROUP is the elementary unit, both for instruction and for combat. It is composed of one squad of machine riflemen (F.M.) and one squad of scouts. Each squad numbers six cavalrymen and is transported by one cross-country car.

The RIFLE PLATOON consists of three combat groups, some communications personnel, and one motorcyclist (messenger).

The RIFLE SQUADRON consists of four platoons. The captain has a staff and four motorcycle messengers.

The squadron acts either "in the battalion or separately or in temporary groups; it operates most frequently in liaison with all or part of the machine gun and accompanying weapon squadron, with the motorized machine-gun units, with the motorcyclists, and with the artillery."

The MACHINE GUN AND ACCOMPANYING SQUADRON consists of:

A command group and three messengers
Four machine-gun platoons, each of two sections of two guns, each gun on a cross-country vehicle
One accompanying weapon platoon, including one 37-mm. gun (personnel transported in a cross-country car which also tows the gun) and one section of mortars (2), each of which is carried on a cross-country car.

The squadron acts "in support of the riflemen, firing on terrestrial or aerial objectives, either as part of the battalion or in temporary groups."

The BATTALION consists of:

A command group, having five cars
Three rifle squadrons
One machine gun and accompanying weapon squadron.

"Supported by motorized machine guns, motorcyclists, and artillery, the battalion acts either as part of the regiment or separately; it is frequently called upon to operate on extended fronts."

(11) LA ROUE VA-T-ELLE RECONQUÉRIR SA SUPRÉMATIE? [Will the wheel regain its supremacy?]

In the problem of motorization (mechanization) two opposing elements struggle for preponderance: mobility and protection. It is in the direction of an increase in mobility that the present and proposed developments seem to point. This mobility (speed) is of two kinds: speed on the road and speed across country. "As to the first," says the review "L'Armée Moderne," "the results in the recent maneuvers were most encouraging. Entire convoys moved at speeds better than 18 miles per hour. As to the second, the vehicles used were able, under the handling of personnel thoroughly familiar with their operation, to move at speeds of from 12 to 15 miles per hour."

The difficulty in the problem of speed arises from the necessity of having a vehicle capable of moving either on roads or across country. The solution had been, until recently, found in the abandonment of wheels and the substitution of a flexible track. The latter has given excellent results across country, and has permitted satisfactory speeds on roads.

"L'Armée Moderne" doubts, however, that this is a permanent solution, and believes that there will be a return to the wheel. The track vehicle, it is said, wears out more quickly than the pneumatic-tired wheeled vehicle and requires a higher grade fuel.

The task is to develop a method more durable than the track but which is yet capable of giving, under similar circumstances, the same services as the track type. There has been built a type in which the propulsion is secured through a multiple number of wheels, but the results over very rough terrain have not been satisfactory. The review "L'Armée Moderne" described a more recent type which retains the multiple driving wheels but encircles the directing wheels by others, independently mounted, and ingeniously articulated. This model has done in trials, over varied terrain, as high as 25 and 30 miles an hour, and on roads up to 50 miles an hour. It easily crossed a trench 4 feet wide.

It would be premature to say that the wheel type will supplant

the track type. The latter has proved its worth. The first is still in the trial stage. It has yet to undergo the tests of extended operation under unfavorable circumstances and over rough terrain.

May 1934

(12) PAGES D'HISTOIRE DE L'ARMÉE BELGE AU COURS DE LA GUERRE 1914-1918.—UN RAID DES ALLEMANDS DANS LES FLANDRES PENDANT LA RETRAITE D'ANVERS.—LE COMBAT D'EEDE-MOLEN (7 OCTOBRE 1914). [History of the Belgian Army in the World War. A German raid in Flanders during the retreat from Antwerp. The fight at Eede-Molen.] Lieut.-Colonel Oor

(13) LES MANOEUVRES FRANCAISES AVEC UNITÉS MOTORISÉES. [French maneuvers with motorized units.] Captain Defraiteur

An article based on reports of the French maneuvers of September 1932, which appeared in the "Militär-Wochenblatt" and in "Wissen und Wehr." The maneuvers were carried out by motorized reinforced infantry division opposed by an infantry division, reinforced but non-motorized, and by a motorized reinforced cavalry division against a non-motorized infantry division, reinforced. (See RML No. 51, page 5.)

(14) ETUDE MÉTHODOLOGIQUE DE LA FORMATION DES OBSERVATEURS TERRESTRES D'ARTILLERIE. [A methodological study of the training of artillery terrestrial observers.] Captain Jacques

(15) LES CARACTÉRISTIQUES DE L'ORGANISATION MILITAIRE BRITANNIQUE. [Characteristics of the British military organization.] Colonel Nerincx

Unlike other great countries, Great Britain, according to the author, has organized its military forces without considerations of political and economic nature, but solely on military considerations. He points out that the British Regular Army is intended for imperial defense, not national defense. The local militia (territorials) have the task of defending the homeland.

In describing the different arms the author notes that two of the cavalry regiments are motorized, have no animals, and that the trains of all cavalry regiments are motor. The infantry carry their machine guns on the small Carden Lloyd motor. The divisional artillery comprises three battalions, which provides one battalion per infantry brigade or one battery per infantry battalion. A battalion of this artillery consists of three batteries of 18-pounders and one battery of 4.5 howitzers. There are now six battalions motorized. The article has no discussion of mechanization.

(16) LES TROUPES DU PARTI NATIONAL-SOCIALISTE ALLEMAND. [The troops of the German National Socialist Party.] Captain Callens

An interesting and rather complete description of the organization of the Hitler forces—the S.A., the S.S., and the H.J.—including the designations of the various units and the names of the grades and ranks officially used. The article records that in almost every issue of the "S.A. Mann," the official paper of the S.A., there is included the recital of an episode of the World War, an article about the former German colonies, a study dealing with naval affairs, and one presenting information about some foreign army. Each issue includes a chapter devoted to instruction in such military matters as infantry combat, technique of firing, antiaircraft defense, gas warfare, etc.

The author, in drawing conclusions, is content merely to point out that in addition to the Reichswehr and the Schutzpolizei, the Reich now has at its disposal an enormous force of men organized in military units, provided with uniforms and field equipment, who are subjected to a rigorous discipline, and fired with an ardent spirit of nationalism.

(17) CONTRIBUTION À L'ÉTUDE DES ABRIS DE FORTIFICATION. [Contribution to the study of fortification shelter.] (II) Captain de Greef

This is a continuation of an article appearing in the April, 1934 issue.

(18) CONTRIBUTION À L'ÉTUDE DE LA TECHNIQUE DES MI. [Contribution to the study of the technique of machine-gun fire.] Lieut.-General Stroobants

A technical discussion of the influence of site on the elements of machine-gun firing.

(19) SUR LE PROBLÈME DU RELÈVEMENT TOPOGRAPHIQUE. [Concerning the problem of topographic bearings.] Lieutenant Deweck

June 1934

(20) PAGES D'HISTOIRE DE L'ARMÉE BELGE AU COURS DE LA GUERRE 1914-1918.—RAID SUR ADAM HOUSE EXÉCUTÉ DANS LA NUIT DU 21 AU 22 JUIN 1918 PAR LE GROUPE DES PATROUILLEURS DU 7E RÉGIMENT DE LIGNE. [History of the Belgian Army in the World War. The raid on "Adam House" on the night of 21-22 June, 1918, by a detachment of the 7th Regiment.] Captain Rousseaux

(21) LES OPÉRATIONS MILITAIRES À LA FRONTIÈRE EST DE LA PROVINCE ORIENTALE PENDANT LA GUERRE 1914-1918. [Military operations on the east frontier of the Eastern Province during the World War.] (I) Lieutnant Bayot

This article deals with certain defensive measures by the Belgians in protecting their African colonies.

(22) TIR FUSANT EN CHAMBRE. [Artillery indoor firing practice.] Major de Ceuninck

The author directs attention to the recognized aversion among battery commanders to training in timed fire, surmising that the reason is twofold: the first reason being that it is not as easily taught as percussion fire, the second being the lack of adequate means for garrison instruction. The author discusses the problem and then gives a detailed description of the construction and the operation of an apparatus which in his opinion provides a highly satisfactory means for use in instruction in the intricacies of timed fire without the use of actual ammunition on the range.

(23) MÉLANGES AÉRONAUTIQUES. [Aeronautical miscellany.] Colonel Desmet

The author, an aviator, discusses very interestingly a number of aeronautical questions, such as the rise of military aviation to a position coordinate with land armies and navies, the strategical employment of aviation, the composition of an army of the air, aerial tactics, characteristics of aviation personnel, qualifications of the higher commanders. The author believes that in any future war between great powers, armies of the air will play leading parts, and that consequently governments should take steps to provide adequate defense against hostile aviation. He believes that without air superiority, victory will be very doubtful.

(24) LA RADIOGONIOMÉTRIE À BORD DES AÉRONEFS ET SON INTÉRÊT MILITAIRE. [The radiogoniometer in aerial navigation and its military value.] Captain Miette

(25) APERCU SUR LA CAVALERIE ALLEMANDE. [A glance at German cavalry.] (I) Lieutenant Dinjeart

In this glimpse of German cavalry one gets a rather complete description of its organization and equipment. The author calls attention to the high proportion of cavalry compared to infantry and artillery, as prescribed by the Allies under the peace treaty. He quotes von Seeckt as having stated that he had never learned the reason for this. The author also discusses the modern "type regiment" and "type division" of cavalry, which is the organization generally used in maneuvers, war games, and map exercises. As we know this modern type organization tends strongly towards motors and firepower. The lance was discarded some years ago, but the German cavalry still may rattle the good old saber, though what its use is to be, or the use of the other equipment, the author does not say. In fact, the article contains no discussion of the employment of cavalry.

(26) MÉTHODE DE DÉTERMINATION DES COORDONNÉES EXACTES D'UN POINT PAR GRAPHIQUE. [Method of determining graphically the exact coordinates of a point.] Lieutenant Laitat

CANADIAN DEFENCE QUARTERLY

(Canada)

October 1934

(1) THE FUTURE OF THE SAAR BASIN. Major Scudamore

(2) THE JEHOL CAMPAIGN. Nikolaieff

(3) THE MACHINE AGE AND AFTER. Boyle

(4) THE ABOLITION OF WAR. Flight Lieutenant Campbell

(5) INFANTRY IN BATTLE

(6) THE EUROPEAN CRISIS, 1904-1918. Major Pope
(7) THE FAR EAST: JAPAN AND HER RELATIONS WITH THE WESTERN POWERS. By the Editor
(8) THE CANADIAN MILITIA AS A POTENTIAL WAR MACHINE. Lieut.-Colonel Elliot
(9) THIEPVAL. Major Baird

CAVALRY JOURNAL

July-August 1934

(1) THE CAVALRY MANEUVERS AT FORT RILEY, KANSAS, 1934
(2) ARMY CAVALRY IN PURSUIT. v.Berchem
(3) THE INFLUENCE OF PACK LOADS ON THE EMPLOYMENT OF CAVALRY. 1st Lieutenant Yale
(4) CHARGE OF ROMAN'S PLATOON AT VANCE. Translated by 1st Lieutenant Pitts
(5) ADVANTAGES OF CAVALRY. Lieut.-General Brandt, German Army, Retired
(6) NATIONAL GUARD AND RESERVE TROOP OFFICERS' COURSE, THE CAVALRY SCHOOL, 1934. 1st Lieutenant Hobbs
(7) THE JAPANESE CAMPAIGN IN JEHOL —1933. Stipler
(8) JUNGLE WARFARE. (II) Cary
(9) DECEPTION IN WAR. Major Bonham
(10) VERSATILE HORSES. Captain Rose

September-October 1934

(11) MODERN CAVALRY. Generalleutnant Brandt, German Army
(12) THE PROVISIONAL CAVALRY CORPS. Major Blunt
(13) CAVALRY IN 1918
(14) A FRENCH CAVALRY RAID AT THE MARNE. Lieutenant Tyng
(15) SECOND CAVALRY EXPERIMENTS WITH LIGHT MACHINE GUNS. Major Benson
(16) EFFICIENCY—TACTICAL OR TECHNICAL? THE LIGHT MACHINE GUN IN CAVALRY ORGANIZATION. Major Philips
(17) WADE HAMPTON. Major Hanson
(18) IF THIS BE TREASON. Lieut.-Colonel Lemly
(19) JUNGLE WARFARE. (III) Cary
(20) THE COLLAPSE OF THE OLD RUSSIAN ARMY. Colonel Nikolaieff

CAVALRY JOURNAL (Great Britain)

October 1934

(1) CAVALRY IN MARLBOROUGH'S DAY. Major Stacke
(2) THE CAVALRY IN FRANCE, AUGUST-NOVEMBER, 1918. Part III. Lieut.-Colonel Preston
(3) THE GERMAN CAVALRY ON THE MARNE. Lieut.-Colonel Burne
(4) MOBILE WARFARE: 1648 AND 1934. Major Pemberton
(5) GERMAN CAVALRY OF TO-DAY. By "Carbine"
(6) COMPENSATIONS IN EQUINE CONFORMATION. Lieut.-Colonel Goldschmidt
(7) THE YEOMANRY ON GALLIPOLI. Major Teichman

CHEMICAL WARFARE BULLETIN

July 1934

(1) CHANNELING OF OFFENSIVE MOVEMENT. Major Kleeberg
(2) CHEMICAL TRAINING OF DIVISION MEDICAL TROOPS. Lieut.-Colonel McKinney
(3) CHEMICAL AGENTS FOR GUERRILLA WARFARE? First Lieutenant Linsert
(4) WAR PROCUREMENT AND MANUFACTURE OF GAS MASKS. Captain Snow
(5) TURKEY PLANS FOR CHEMICAL DEFENSE—A BRITISH VIEW
(6) TRAINING ACTIVITIES
(7) A STEP FORWARD

October 1934

(8) ON THE USAGE OF CHEMICAL SHELL. (Translated from a French study by Captain C.R. Moore, Corps of Engineers)
(9) GASSING THE NAVY. Major Murphy
(10) JUNGLE WARFARE WEAPONS. Second Lieutenant Murry, USMC
(11) PREPARATION FOR CHEMICAL WARFARE RESEARCH. Captain Fain
(12) A GERMAN EVALUATION OF LEWISITE. (Extracted from "Die Chemische Waffe")

COAST ARTILLERY JOURNAL

July-August 1934

(1) THE JAPANESE CAMPAIGN IN JEHOL —1933. Stipler
(2) LOW THOUGHTS ABOUT HIGH FLIERS. Lieut. Colonel Glassburn
(3) JUNGLE WARFARE. Part II. Cary
(4) A BROADCAST HOOK-UP FOR AA INTELLIGENCE NET. Lieutenant Stubbs
(5) ANTIAIRCRAFT DEFENSES: THEIR DEVELOPMENT DURING THE WAR. Part II. Major Englehart
(6) MORE CRIES FROM THE WILDERNESS

(7) HIGH SPEED TARGET. Captain McGarrough
(8) TRAINING ANTIAIRCRAFT MACHINE GUNNERS IN THE USE OF TRACER CONTROL. Major Daneker
(9) MECHANICAL AA TARGET. Lieutenant Smith
(10) A SAFETY BOARD. Captain Stillman

September-October 1934

(11) THE ENGLISH ATTACK ON ZEEBRUGGE. Captain Schultz, German Navy, Retired
(12) BOMBARDMENT AVIATION AND ITS RELATION TO AA DEFENSE. Major Dargue
(13) JUNGLE WARFARE. Part III. Cary
(14) PUBLIC SPEAKING. Colonel Waldron
(15) PROMOTION IS IN THE AIR
(16) WHY THE ANSWER IS NO! Lieutenants McKinney and Gill
(17) THE .45 AUTOMATIC PISTOL. Major Pierce
(18) THE COLLAPSE OF THE OLD RUSSIAN ARMY. Nikolaieff

ESERCITO E NAZIONE (Italy)

BY MAJOR F. DURING, INFANTRY

April 1934

(1) NOTE SUL DISEGNO DI LEGGE PER L'AVANZAMENTO DEGLI UFFICIALI DELL'ESERCITO. [The new promotion system for the Italian Army.] Stripe

The new Italian promotion list is divided into two parts. The first part is the command list and contains the names of all officers who have an excellent rating as commanders and leaders; promotions made from this list are considerable faster than promotion made from the second part of the list, which contains the names of all other officers. When an officer loses his qualifications as a commander and leader, he is transferred to the second list. Officers of the second list can only reach the grade of Lieutenant Colonel; in exceptional cases they can be promoted to the grade of Colonel. An officer has to serve an average of 5 years in the grade of Second and First Lieutenant, 10 years in the grade of Captain, 5 years as Major, 4 years as Lieutenant Colonel, 6 years as Colonel, 4 years as Brigadier Commander, and 5 years as Division Commander.

An officer can be selected for promotion if he has performed some meritorious special service. General Staff officers are promoted by selection. In this case the minimum time an officer must serve in his grade is as Lieutenant 1 year, Captain 2 years, and Major 1 year. Special provisions are made for former enlisted men who proved their worth during the War and after.

(2) PER LA GUERRA CELERE. [Mobile Warfare.] Pacinotti

In order to prevent a war of stabilization, the air arm must put "momentum" into the next war. Many mechanized units must be sufficiently far advanced to break through the enemy lines of defense and keep up a "maneuver." The mass of the army consists of infantry, richly equipped with trucks and made more mobile by eliminating some of their heavy individual equipment, reinforced by strong motorized and mechanized artillery. Mechanized units must keep all roads open for the mass of the army to follow.

(3) PROBLEMI DELLA SOLIDARIETÀ GUERRIERA—LA COOPERAZIONE AEREO-TERRESTRE IN FRANCIA. [Cooperation between ground and air in France.] Sarfatti

A discussion of the French tentative regulations for air maneuvers. The mission of the contact planes is to determine the front line. Infantry uses flags, panels, and small bengal fires in laying out the front lines.

May 1934

(4) FORZE ARMATE E CORPORATIVISMO —IDEE SU LA TECNICIA E L'ECONOMIA NELLA PREPARAZIONE DELLA GUERRA. [Industrial preparation for war.] Serventi

In future wars the entire population will be affected and the outcome of the war is not only dependent on a first-class army, but also on the industries. The author wants to have the cities divided in different categories according to the strategic location and industrial capabilities for war; for instance, a city located near the boundary should prepare largely for air de-

fense, while a city located in the interior, where there is comparatively little danger from air attacks, should develop industries for war use.

(5) L'AVIAZIONE IMBARCATA. [Naval aviation.] Accorsi

(6) UN GRUPPO DI OBICI DA 75/13 NELL'APPOGGIO. [A battalion of howitzers assisting a battalion of infantry in the attack.] Bottari

(7) L'INDIPENDENZA DELLE FILIPPINE E L'EQUILIBRIO DEL PACIFICO. [The independence of the Philippines and the balance in the Pacific.] Pigli

According to Italian views, America will never give up its naval base nor withdraw its troops from the Philippines, despite the fact that the Philippines will be given their independence. There are two reasons for this view. First, Japan's attitude, and second, the millions of dollars spent on the defense of the Philippines.

BY FIRST LIEUTENANT M.D. TAYLOR, F.A.

June 1934

(8) IL PARLAMENTO ITALIANO E L'AVANZAMENTO NELL'ESERCITO. [Parliament and army promotion.]

(9) NAVI DI LINEA. [First line battleships.] Alcione

(10) LA ORGANIZZAZIONE DELLE NAZIONI PER LA GUERRA—VII. LA CECOSLOVACCHIA. [War organization of various nations: Czechoslovakia.] Franchini

An analysis of the military strength of Czechoslovakia under the following heads: territory, population, agriculture, mineral resources, industrial activity, communications, foreign commerce, financial conditions, mobilization and economic self-sufficiency.

(11) COME LA FRANCIA PREPARA I GIOVANI AL SERVIZIO MILITARE. [How the French youth is being prepared for military service.] By "A.R."

(12) VOLONTARI ITALIANI NELLA GUERRA SERBO-BULGARA DEL 1885. [Italian volunteers in the war between Serbia and Bulgaria in 1885.] Missana

(13) DIFESA DI UN PASSO MONTANO. [Defense of a mountain defile.] Trevissoi

A tactical study of the conduct of a reconnaissance detachment consisting of a cyclist battalion and a battery of 75's, with the mission of delaying an enemy advancing through a pass; also of an infantry regiment with two artillery battalions attached in the occupation and defense of a position blocking the exit of a pass.

(14) IL TERRENO DELLE PROSSIME GRANDI ESERCITAZIONI. [The terrain of the coming Italian grand maneuvers.] Cocchieri

(15) IL SERVIZIO ELETTRICO NELLA GRANDE GUERRA 1915-18. [The telegraph and telephone service in the World War.] Maglietti

(16) BREVE DIZIONARIO DEGLI ARCHITETTI ED INGEGNERI MILITARI ITALIANI. [Compilation of Italian military engineers and architects.] General Maggiorotti

FIELD ARTILLERY JOURNAL

July-August 1934

(1) ARTILLERY AND INFANTRY COMBINATION. Colonel Greer

(2) THE THIRD BATTLE OF ROMAGNE. Colonel Lanza

(3) THE AUTOGIRO AND ITS VALUE TO THE FIELD ARTILLERY. Major Parker

(4) LE CATEAU, 26 AUGUST, 1914. (II) Major Williams

(5) MAINTENANCE OF THE TRUCK-DRAWN BATTERY. Lieutenant Kennett

September-October 1934

(6) BRIEF NOTES OF A LIAISON OFFICER. Major Prichard

(7) CALIBRATION OF THE RANGE DRUM ON THE BRITISH 75-MM. GUN, MODEL 1917, FOR USE WITH THE 37-MM. SUB-CALIBER TUBES. Lieutenant Dickson

(8) THE DIRECT SUPPORT OF INFANTRY IN AN ATTACK. Major Wahl

(9) NOTES ON DEFENSE AGAINST AN AIR ATTACK OF A COLUMN ON THE ROAD. Lieutenant Blakeney

(10) LAYING WIRE. Captain Tisdale

(11) THE USE OF THE FIELD ARTILLERY TRAINER AT CORNELL UNIVERSITY. Captain Holmes

(12) INFLUENCE OF INDUSTRIAL PRODUCTION ON MILITARY OPERATIONS. Colonel Menu, French Army

(13) "SOLAR SHADOW" ORIENTATION FOR FIELD ARTILLERY. Lieutenant Kelker

(14) THE MYSTERY OF LUTZEN. Pratt

(15) THE HISTORY OF BATTERY D, 1ST F.A., 1792-1934. Lieutenant Babcock

FIGHTING FORCES (Great Britain)

August 1934

(1) THE GAMBIT IN 1914. Robinson
(2) THE ALLEGED VULNERABILITY OF THE AUTOGIRO. Major Hilton
(3) THE EUROPEAN SCENE. Carter
(4) THE BEGINNING OF AN INTERNATIONAL POLICE FORCE. Major-General Maurice
(5) EMPIRE BUILDING IN THE FAR EAST. Brigadier-General Bruce

October 1934

(6) THE FRENCH AND OURSELVES. Captain Wintle
(7) B.M.G. ("BOMBERS MUST GO.") By the Editor
(8) WITH THE FIRST DIVISION ON SALISBURY PLAIN. Captain Tuke
(9) FIGHTING SHIPS OF THE FUTURE. Vice-Admiral Radcliffe
(10) THE RED LIGHT AT GENEVA
(11) THE PROBLEM OF INTERNATIONAL POLICE. Martin

INFANTRY JOURNAL

September-October 1934

(1) KEEP 'EM ROLLING. Captain McClure
(2) WINFIELD SCOTT AND THE BLACK HAWK WAR. Major Elliott
(3) IF THIS BE TREASON. Lieut. Colonel Lemly
(4) JUNGLE WARFARE. Part III. Cary
(5) THE CURE FOR COMMUNISM. Lieut. Colonel Finch
(6) PUBLIC SPEAKING. Colonel Waldron
(7) PROMOTION IS IN THE AIR
(8) COLLAPSE OF THE OLD RUSSIAN ARMY. Nikolaieff
(9) LET'S PUT 'EM ACROSS. Lieut. Colonel Upham
(10) THE .45 AUTOMATIC PISTOL. Major Pierce

INFANTRY SCHOOL MAILING LIST

Volume VIII—June 1934

(1) PANIC
(2) ANTI-TANK DEFENSE (FRONT-LINE TROOPS)
(3) SMALL PROBLEMS—INFANTRY
(4) THE MOTORIZED INFANTRY REGIMENT
(5) THE MOTORIZED REGIMENT IN ATTACK
(6) THE FRENCH VI CORPS IN THE BATTLE OF THE FRONTIERS
(7) FRENCH ADVANCE GUARDS
(8) SOME AIDS TO MAP READING
(9) OPERATIONS OF A BRITISH INFANTRY BATTALION IN THE RETREAT FROM MONS
(10) RECENT DEVELOPMENTS IN INFANTRY WEAPONS
(11) OBSCURITY

JOURNAL OF THE ROYAL ARTILLERY (Great Britain)

October 1934

(1) "IS OUR COUNTER-BATTERY PROCEDURE UNNECESSARILY ELABORATE? COULD THE DESIRED RESULTS BE ACHIEVED BY SIMPLER METHODS?" ("Duncan" Commended Essay, 1933-34) Lieut.-Colonel Collingwood
(2) THE INDIAN MUTINY AT MHOW AND INDORE. Captain Thicknesse
(3) FRANCE, GERMANY AND THE SAAR. Major Reynolds
(4) THE BOMBARDMENT OF THE HARTLEPOOLS. Captain Murley
(5) EXTRACTS FROM "THE CONDUCT OF WAR." VI.—GRAVELOTTE—THE FIRST PHASE. Marshal Foch. (Translated by Captain Kernan)
(6) SMOKE, GAS, AND HUNTING SCENT. Brigadier Farfan
(7) MODERN ASTRONOMICAL NAVIGATION. Major Pollard

JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION (Great Britain)

August 1934

(1) THE DEVELOPMENT OF AIRCRAFT AND ITS INFLUENCE ON AIR OPERATIONS. Squadron Leader Goddard
(2) SMALL AIRSHIPS IN THE WAR. Lieut.-Commander Manning
(3) MODERN INFANTRY DISCIPLINE. By a Field Officer
(4) RAISING THE GERMAN FLEET AT SCAPA FLOW. Cox
(5) INDUSTRIAL MOBILIZATION IN FOREIGN COUNTRIES. Colonel de Gaulle, French Army
(6) GERMAN AVIATION TO-DAY
(7) BACTERIAL AND CHEMICAL WARFARE
(8) THE CAMEL CORPS OF THE SUDAN DEFENCE FORCE. Brevet-Major Boustead
(9) TRAINING TROOPS ON FOREIGN SERVICE. Colonel Franklyn
(10) THE CONTROL OF COMMUNAL DISTURBANCES IN WALLED CITIES. Lieut.-Colonel Burrows
(11) SIR RALPH ABERCROMBY. THE BICENTENARY OF A FAMOUS SOLDIER. Paine

(12) PROBLEMS OF THE NEXT NAVAL CONFERENCE. Prendergast

(13) BRITISH STRATEGY. Lieut.-Commander Fawkes

(14) BRITISH RE-ARMAMENT. Major Hall

(15) THE INTERNATIONAL SITUATION

JOURNAL OF THE UNITED SERVICE INSTITUTION OF INDIA (Great Britain—India)

July 1934

(1) JAPAN AND MANCHURIA. Major Laws

(2) CO-OPERATION BETWEEN THE ARMY AND THE R.A.F. By "Mouldy"

(3) TWO LECTURES ON THE MESOPOTAMIA CAMPAIGN, 6TH NOVEMBER 1914, TO CAPTURE OF KUT-AL-AMARA ON 29TH SEPTEMBER 1915. Part I. Major Shearer

(4) RIFLE TRAINING. Lieut.-Colonel Sanders

(5) THE DISARMING OF THE NATIVE TROOPS AT MIAN MIR, MAY 13TH, 1857. Grey

(6) PROTECTION IN WOODED HILLS. Major-General Rowan-Robinson

(7) THE BATTLES OF GENERAL SAMSONOV'S ARMY ON THE 26TH, 27TH AND 28TH AUGUST 1914. Part II. Lieut.-General Golovine

MARINE CORPS GAZETTE

August 1934

(1) COMPONENTS OF ANTI-AIRCRAFT DEFENSE. First Lieutenant Stephenson

(2) WHY MARINES ARE LANDED. Castle

(3) THE BENEFIT OF BATTALION ORGANIZATION FOR THE RESERVES. Major Wright

(4) AFTER NINETEEN YEARS. Major Fegan

(5) SMALL BORE MUSKETRY FIRING. Second Lieutenant Clark

(6) THE STRATEGIC IMPORTANCE OF THE CARIBBEAN SEA. Lieut.-Colonel Coyle

(7) SUGGESTIONS FOR .22 CAL. RIFLE SHOOTING PRELIMINARY TO .30 CAL. RECORD FIRING IN THE MARINE CORPS RESERVE. Major Long

(8) MARINE CORPS SCHOOLS, 1934-1935. Major Miller

MILITARWISSENSCHAFTLICHE MITTEILUNGEN (Austria)

BY MAJOR F. DURING, INFANTRY

April 1934

(1) DER GASWERFERANGRIFF BEI FLITSCH AM 24. OKTOBER 1917. [The gas attack at Flitsch, 24 October, 1917.] Major Heydendorff

Major Heydendorff gives credit for the first gas attack by means of projectors to the British, near Arras, on 24 April, 1917. The simultaneous discharge of a large number of gas drums, obtained by this method, flooded the trenches with gas to such an extent that respirators failed to keep it out, and the German losses in this and in the succeeding attacks were heavy. German headquarters at once decided to adopt the projector method, and the 18-cm. gas projector was soon produced. It consisted of a smooth tube with hemispherical end, without a mounting, for burying in the ground. The charge was fired electrically, and threw a gas drum containing 3 to 4 gallons of phosgene, or Green-Cross, a distance of about 1,400 yards; ordinary bombs could be used instead of the gas drums.

An opportunity for the first trial of this new weapon was afforded in the autumn of the same year in the great Austro-German offensive, which resulted in the Italian disaster at Caporetto. The 35th Pioneer Battalion of the German Army, trained in gas-projector work, was allotted to the forces selected for the attack, the Fourteenth Army under General von Below. The area chosen for gas bombardment lay south of Flitsch and included deep ravines with steep sides, which had served the Italians well as covered positions for reserves. Of 1,000 projectors arranged for, 894 arrived and were dug in.

At 2:00 AM, 24 October, the artillery started a gas-shell bombardment, and five minutes later the whole of the projectors were fired, of which 47 failed to explode. There were also 29 prematures. The latter, by gassing the firing positions, spoiled to a great extent the rest of the program. It had been intended that each projector should

fire one gas drum and then one ordinary bomb. Actually, by nearly 9:00 AM, it had only been possible to fire a second time with 269 of the projectors.

At 9:00 AM, the infantry went over the top, 63 German battalions and 72 Austro-Hungarian battalions advancing on a front of about 20 miles. The Italian lines were penetrated at Flitsch, at Karfreit (Caporetto) and at Tolmein.

Major Heydendorff states that the whole Italian garrison in the ravines, between 500 and 600 men, were found to have been killed by gas, and that the gas-projector bombardment, by thus eliminating all flanking fire from the ravines against the Austrians advancing on Flitsch, had doubtless influenced the events of the day.

(2) DIE BEFEHLGEBUNG BEIM ZUG UND BEI DER KOMPAGNIE IM GEFECHT. GEDANKEN UND BEISPIELE. [The giving of orders in battle.] Major Hegedüs

Major Hegedüs has compiled several pages of typical orders, suited to varying situations in the field, and such as would be issued orally by company or platoon commanders. His introduction to these examples consists of considerations of a more general nature upon the giving of orders, and he says much that is valuable. He speaks of the necessity of clearness of decision. He rises to eloquence when he speaks of calmness. "Calmness is the first requirement of every leader. This is a calmness which has nothing to do with lethargy. On the contrary, it must be associated with a quick grasp and the power of rapid thought. It consists rather in a composed state of mind arising from internal discipline and confidence in one's own powers. This peace of mind must be radiated downwards from the leader so that it comes to permeate the troops. Only when this is the case can one be sure of purposeful action quickly adapting itself to changing circumstances."

(3) DIE WIEDERHERSTELLUNG DES JAREMCZE- UND JAMNA-VIADUKTES DER BAHNLINIE KÖRÖSMEZÖ—DELATYN. [The reconstruction of demolished railway viaducts in war.] Major Janick

After the Russian Revolution in March, 1917, the fighting strength of the Russian armies noticeably weakened, and Kerensky's brave gesture of a renewed offensive in East Galicia soon petered out. Almost immediately followed the counterstroke, eleven German divisions taking the offensive near Zalosce on 19 July, with such success that they penetrated on the first day to a depth of 10 miles on a 12-mile front. By 3 August the whole of the territory of East Galicia and of the Bukovina, which had been occupied by the Russians, was again in Austrian hands. The advancing troops found railroad bridges of 20-yard span and upwards destroyed with a thoroughness indicating the abandonment of any idea of re-conquest. This was specially the case with respect to the three single-track railways radiating from Stanislau, and an enormous amount of work was thrown upon the engineers in the deep-cut valleys of the Pruth, the Dniester, and the Sereth. The work of restoration had to be started at once, and the first object of attention was the main (single) line from Stanislau via Kolomea to Czernowitz, which at that time was the only line of supply of the German Third and Seventh Armies. Next in importance was the railway which, following the course of the Pruth River, eventually crosses the Carpathians, and at Korosmezo enters what at that time was Hungary, thus connecting the Galician railway network with the supplies of the Hungarian plain.

Major Janick, then commanding the 1st Railway Company, gives here an account of what was done to make good the demolition of two adjacent viaducts.

(4) WIRTSCHAFTLICHE MOBILISIERUNG. [Economic mobilization.] General Levnaic-Iwanski

This form of preparation for war was almost entirely lacking among the nations which entered the World War. Among the many reasons that have been given for such neglect are, (1) that nobody believed that a long war was possible; (2) that no

nation wished to arouse suspicion of hostile intent by undertaking in peace-time economic measures impossible of concealment and likely to be misconstrued; (3) that war ministries had no adequate staffs, either in numbers or training, for dealing with industrial questions.

The first nation to take up the question after the War was the United States, and in 1920 Congress passed the National Defense Act, which provides for the whole personnel and material strength of the country being made available for national defense in war. Such a process is now everywhere recognized under the term "industrial mobilization."

The writer of this article now warns us that, in addition to the military mobilization, the industrial mobilization, as arranged for by the United States, is sufficient only in the case of a rich and self-supporting country like the United States. Other countries in proportion to their weakness must mobilize their whole economics, i.e., they must arrange for their trade to continue in war, and for a continuous supply of their necessary imports of raw material in which the country is lacking. For such countries "industrial" mobilization, like financial mobilization, though an important part, is still only a part of a greater "economic" mobilization. The writer treats the latter under twelve heads: personnel; finance; raw materials; motor fuel; transport; industrial measures; food sources; trade and communications; social measures; intelligence; propaganda; and statistics. He suggests for the sub-heads of item six in the foregoing list, i.e., for "industrial" mobilization: distribution of raw materials and motor fuel; machinery; munitions and ordnance; chemistry (explosives, medicines, and manures); leather; clothing; food; building materials. As evidence of the importance now attributed to this subject, attention is directed to the founding of the Army Industrial College in the United States in 1924 and of the Imperial Defence College in England, both of which are highly commended.

May 1934

(5) DIE ROLLE DER TAGLIAMENTO-BEFESTIGUNGEN 1915-1917. [The Tagliamento defenses during 1915-1917.] Major Heydendorff

These defenses, which consisted of a fortified perimeter in the hilly country east of Gemona, and two smaller fortified bridgeheads in the Venetian plain, one at Codroipo and the other at Latisana, were begun in 1910, and by August, 1914 were for the greater part complete and armed. Their object was to secure for the Italian Army, mobilizing behind the Piave, an area for deployment between the rivers Piave and Tagliamento.

Between August 1914, and Italy's entry into the World War in May, 1915, the Tagliamento defenses were completed as regards armament, stores, and subsidiary works. Italy's army took the field with only 66 batteries of heavy and super-heavy field artillery, a lack of heavy guns which led to General Cadorna's decision to strip the Tagliamento defenses in favor of the field army. In the fall of 1915 accordingly, a disarmament took place, which was complete except in the case of two works, the fort at the mouth of the Fella valley and the fort in front of it at Chiusa, which closes the Raccolana valley. These two forts alone retained their armament, as they lay on the direct line of approach, from Austria via Tarvis in Carinthia, of the only outflanking movement threatening the Isonzo position.

Cadorna, arraigned before the Italian Court appointed to inquire into the causes of the disaster of Caporetto, pleaded, in addition to the reason for disarmament of the Tagliamento defenses given above, that the works themselves were weakly constructed and would have been useless against the Austrian 12-in. mortars. The Court found that General Cadorna, filled only with the idea of advancing at all costs, had never entertained the possibility of the enemy's driving the Italians back as far as the Tagliamento.

The author, while admitting the impossibility of the Tagliamento defenses surviving a siege, believes

that they would, in spite of their weakness, have provided just that amount of resistance to the advancing Germans and Austrians necessary for the Italians to make an orderly withdrawal over the river. He analyzes the events and movements between 24 and 31 October, and estimates the delays which might reasonably have occurred, had the admittedly weak Tagliamento defenses only been able to put up some sort of a show.

The Court of Inquiry's finding was that in view of the state of the retreating Italian Army, the presence of permanent fortifications along the Tagliamento "would hardly have influenced the course of events."

Major Heydendorff cannot agree with this finding, and consequently is obliged to blame the Commander-in-Chief for not re-arming the Tagliamento defenses, in other words, for not returning the guns lent to the field army when they were no longer needed. They could certainly have been spared in 1917, when the number of heavy batteries on the Italian front had risen from 66 to 950.

(6) DER RUSSISCH-POLNISCHE KRIEG 1919-1920. [The Russo-Polish War, 1919-1920.] (II) Colonel v.Wittich (See abstract, page 43.)

(7) FRANKREICHS SICHERHEIT. [The security of France.] Colonel v.Loneck

This is a compilation from various sources, especially from articles dealing with the French frontier defenses which have appeared in "L'Illustration," the "Revue d'Infanterie," the "Kolnische Illustrierte Zeitung," and the "Neue Freie Presse." Among these periodicals the second-named alone can be regarded seriously from the point of view of military scientific accuracy. The remainder, like the rest of the popular press, cater to the taste of a public, either really sensation-loving, or which they believe to be so. It is unlikely that they have discovered, or disclose, anything which the French War Office desires to conceal, but they draw freely upon the imagination. The "Revue d'Infanterie" in this fantasia provides a substratum of fact, but it undoubtedly betrays no secrets. The application of a diagrammatic drawing to an actual photograph of a wooded hill shows a nest of pill-boxes, galleries and shelters, and is certainly interesting.

(8) DER SINN DER BELGISCHEN RÜSTUNGEN. [The Belgian defense measures.] Colonel v.Xylander

This is a historical retrospect of all projects for the defense of Belgium which have been considered by the Belgian Government since the Franco-Belgian Agreement of 1920, and of the measures undertaken to that end.

(9) NACH NEUEN KAMPFMITTELN SUCHEN, SIE ÜBERRASCHEND ENTWICKELN—EINE AUFGABE DES GENERALSTABES. [The invention and development of new weapons—a task for the General Staff.] Colonel Blümner

Colonel Blümner, starting from the story of the opportunity lost when Lieutenant Burstyn, of the Austro-Hungarian Army, invented a tank in 1911, which was turned down by the experts ("Wehr und Waffen," January, 1933, and "The Royal Engineers Journal," June, 1933, page 365), loses no time in lamenting, but investigates what happened with that and other inventions for the purpose of discovering what system is to be adopted, and what arrangements are to be made, to avoid similar misfortunes in the future. He points out that the testing of a quite new invention by a Commission in the first instance is a mistake, since the commission will always judge from the standpoint of existing matériel or weapons. Thus, Burstyn's tank, perhaps unfortunately labelled as a motor-gun, was judged from the technical standpoint only as a new form of an existing weapon; and as such was condemned. It never got as far as being seen by the General Staff, i.e., being considered from a tactical point of view. It should have been regarded as an entirely new form of weapon, of a tactical nature; in fact, as a special means of overcoming machine-gun fire.

It has been said that technique strides ahead of tactics, but it would be better if technique and tactics went hand-in-hand, and that

those responsible for the conduct of war should point out military requirements for inventors to devise new weapons.

Colonel Blümner suggests that the General Staff contain a special department consisting of General Staff officers with technical training, whose business it would be to keep abreast of scientific advance, and to point out army requirements with a view to the creation of new weapons. This department would watch all new patents, at home and abroad, to seize upon any idea for trial which promises either improvements in existing, or the creation of new, weapons.

The Italians already have a Scientific Intelligence Service, whose business it is to supply information of this nature to the Research Council at Rome.

(10) DIE ENTENTEARMEEN AUF DEM BALKAN IM JAHRE 1916. EIN BEISPIEL FÜR DIE SCHWIERIGKEITEN KOALIERTER KRIEGFÜRHUNG. [The difficulties of a war of coalition.] Lieut.-Colonel Klumpner

The reference is to the armies of the Entente in the Balkans in 1916, and the author, whose authorities are "La grande guerre dans les Balkans," by Larcher and "L'Armée d'Orient," by Deygas, has chosen an illustrative example of the difficulties that may arise among allied nations in the carrying out by their troops of concerted action. The difficulties were mostly political in origin, but the lack of a leader able to inspire the troops of five nations, brought about a state of affairs where "everybody complained; the Serbians against the French for letting them bear the burden of the fight, and for waiting for Serbian successes before committing themselves; the French against the British for taking their feigned attacks too literally; the Russians, because they were being sacrificed in other people's interests. Even nations which were related showed little understanding of each other. The Serbs quarrelled with other Slavs in the volunteer formations; the Russians indignantly rejected the Serbian suggestion that they should be placed under Serbian orders."

There were also many limitations and conditions to be observed in using the troops of the different nationalities; e.g., the Italians granted to the French Commander-in-Chief the right of laying down tasks, objects, and areas, but reserved for themselves to decide the manner in which an attack was to be carried out.

(11) DER FALL DES MONTEMAGGIORE BEI DER HERBSTOFFENSIVE 1917 GEGEN ITALIEN. [The loss of Monte Maggiore during the autumn offensive of 1917.] Major General Schemfil

The Italian Board charged with investigating the causes of the catastrophe of Caporetto, "the greatest defeat, reckoning by numbers lost, in the world's military history," found that, after the original breakthrough, three phases were of decisive significance. The first of these was the loss by the Italians of the Monte Maggiore, which determined the withdrawal of their front behind the Tagliamento. Monte Maggiore, 5,300 feet high, lies in the center of a range 20 miles long, stretching with only one gap, the valley of the Torre, from the Isonzo to the Tagliamento. As the range runs due east and west, its retention by the Italians became of vital importance, since Monte Maggiore became the key to their whole position as soon as the Austrians, on 24 October, had broken through at Flitsch on the north side of the mountains. Cadorna, during the first day of the battle, gave the commander of the Second Army three different lines of resistance, all of which started in the north at the Monte Maggiore.

The Board of Investigation concluded that the group of two battalions of Alpini, and five machine-gun companies, to whom the defense was entrusted, withdrew from the Monte Maggiore between noon and 1:00 PM on 26 October, fighting in two directions and under threat of encirclement.

The author of this article, who took part in the operations as a captain, brings a wealth of evidence to show that the retirement was premature, since at that time there was neither attack nor threat.

MILITAR-WOCHENBLATT (Germany)

BY MAJOR F. DURING, INFANTRY

11 June 1934

(1) SOLDAT UND VOLK. [Soldier and civilian.]

An article about the German Army, giving it its just dues for past accomplishments.

(2) AUSBAU DER FRANZÖSISCHEN HEERESRÜSTUNG. [Expansion and reorganization of the French Army.]

According to this article, the French War Department has been allotted 1,175 million francs for border defense construction; the chief of the air corps received 980 million francs for armament and development of the air arm, and the navy 875 million for coastal defense, etc. The border defenses are divided into sectors and placed under control of a sector commander.

The 4th Cavalry Division has become completely motorized and has no more horses. It consists of the 7th Brigade (18th Dragoons, 4 battalions auto-machine guns); the 8th Brigade (6th Cuirassier Regiment, 4 battalions "Dragons portées") and the 74th Motorized Field Artillery.

The article then states that four other cavalry divisions are partly motorized, but that the cavalry regiments of the division retained their horses.

The plan for the French maneuver for this year contemplates having reserve fliers with their own planes called to active duty. From 15 to 30 September the 41st Division, consisting of about 15,000 reservists, will train near Chalons. This experiment is novel and the result is anxiously awaited.

(3) AUFKLÄRUNG IN DIE FERNE. [Distant reconnaissance.] (I)

This article, the first of a series, is an interesting discussion about reconnaissance of a cavalry division, in which the developed cavalry operation was partly carried out by troops in the field. (An abstract of this article will be published in our next issue.)

(4) KAVALLERIE UND KRAFTFAHRWAFFE IN DER ZUKUNFT. [Cavalry and combat vehicles.] Lieut. General Marx, Retired

It is true that a union of cavalry and combat vehicles has taken place in most armies, but the author believes this to be an "unhappy marriage." Combat vehicles travel about 100 miles per day, which necessitates that cavalry and infantry be transported in trucks to cover this distance in time to be of use. But in order to use trucks good and numerous motor roads are needed. Special care should be used to build roads which are not slippery after a rain. Field artillery units in France complained that it was very difficult and dangerous to travel on wet and slippery roads.

During the 1928 maneuvers it took combat vehicles 2 hours to reach their destination, while the cavalry arrived at the same place just in time for the attack, after marching 8 hours. How much better would it have been if at least the riflemen of the cavalry had been transported in trucks; this would have given them a rest of 6 hours before the attack.

(5) LUFTFAHRT-RUNDSCHAU. [Survey of aviation.] First Lieutenant Feuchter, Retired

(6) DER WERT DER KRIEGSERINNERUNG IN DER WEHRMACHT. [The merit of war experiences.] Captain Scholtz, Retired

The writer discusses the merits of experiences of individuals provided that such experiences are in sufficient numbers to form a complete picture of the whole.

18 June 1934

(7) DIE WEHRMACHT IN STAAT UND VOLK. [The defense force of the nation and the people.] Captain Scholtz, Retired

(8) AUFKLÄRUNG IN DIE FERNE. [Distant reconnaissance.] (II)

(9) ZUM STREIT UM DAS KAVALLERIEPROBLEM. [The cavalry problem.] Lieut. General Erfurth, Retired

The first weeks and months of a war show plainly whether the hopes and expectations one has placed in a weapon or arm are materializing. And in order to find out whether or not the cavalry of all warring nations fulfilled that which was expected of them, we have to look over those months of the war, when the war of movement was in progress.

And one is forced to admit that the cavalry did not come up to expectations, but this admittance should not mean that the cavalry arm has no more use in a future war and should be abolished; on the contrary, this admission should lead to a continued development of that arm, so that it will be capable to cope with any situation in a future war.

(10) ZUSAMMENARBEIT ZWISCHEN HEER UND FLOTTE. [Cooperation between Army and Navy.] Lieut. Colonel v.Schafer, Retired

(11) TECHNISCHER RUNDBLICK. [Technical survey.] Colonel Blümner

Among other developments of motorized vehicles, the author mentions a French "armored snake," which is to accompany the infantry in the attack. This "armored snake" is about ½ yard in height, approximately 30 inches wide, and 2½ to 3 yards long. The motor and gas tank are in rear; it is armed with a machine gun which is located in front and handled by one man, who is in a prone position, steering the "snake" with his feet. It presents a small target, and on account of the simplicity and small cost of its construction, can be quickly produced in large quantities.

(12) WIRTSCHAFTLICHE RATIONALISIERUNG, WETTBEWEBRSFÄHIGKEIT UND WEHRPOLITIK. [Industrial mechanization, capabilities of industry and national politics.] Captain Ruprecht, Retired

The author discusses the inconsistencies of a nation which advocates birth, and fights the death rate and at the same time permits the entire industry to mechanize, thereby letting the machine do the work which men should do.

(13) DAS "LOCH" IM NORDEN FRANKREICHS. [The "Hole" in northern France.] By Dr. "S"

A discussion of the increased armament of France. The author states that ever since 1870-71 France has carried the thought of revenge, and even after the World War this thought is still uppermost in the mind of France.

(14) GEOPOLITISCHE BETRACHTUNG DER SOWJETUNION. [Geo-politic survey of the Soviet Union.]

A review of the book, "The Soviet Union, a geopolitical problem," by O. v.Niedermayer and I. Semjonow.

25 June 1934

(15) DAS KAMPFWAGENPROBLEM IM ZUKUNFTSKRIEG. [The problem of tanks in a future war.]

The author discusses the development of the tank since the War. Some foreign armies have a platoon of antitank weapons in each battalion, whereas divisions each have a motorized antitank company. The speed of the present tank is such that it can go around any antitank weapon, but this is not even necessary, as the tank of today does not fear battle. The author assures us that in a future war one will see on a front of 20 miles about thirty tank battalions, or 1,500 tanks.

The Italian writer, Guadagnini, has said that the tank is useless in a war of movement. The author of this article disagrees and gives his idea of the employment of tanks at the beginning of a war. Armies, more or less motorized, advancing against each other. The advance guards test each other and open the fight. He assumes that a division has a tank battalion and that the division advances in two or three columns. It is certain that the tanks will not be found in the march columns, but either between the columns, advancing by bounds, or on the flanks and near the advance guards, in order to enter the fight at an early stage. This is possible, as the new tank is able to make use of all roads, improved or unimproved. As soon as the advance guard commander gets contact, the tank battalion commander assembles his battalion and prepares for action, expecting a mission such as fighting for the possession of a controlling ridge. The main tank objectives of today are enemy artillery and reserves, and not barbed wire and trenches, as Guadagnini says.

While the author assumed that a division had a tank battalion, he did not mean that this battalion was to be an organic part of each division or that each division had a tank battalion attached to it at all

times. Such use of tanks would be uneconomical. The tanks must be at the disposal of the higher command, and corps or divisions making main efforts should be given tank battalions.

The greatest problem in a future war will be the cooperation between tanks and infantry. Shortly after an attack starts the tanks will be so far ahead of the infantry waves that the infantry will have to fight on its own. This problem is being studied by each foreign army. According to the author, too much weight is given to the belief that antitank defense means that no tanks will be able to pass this defense. It takes too long to build a mine field large enough to stop all tanks, and mines are the most effective antitank weapons. The best defense against tanks are tanks.

After the French maneuvers in 1932, Painlevé said that the tank of stabilized warfare has become a most important weapon in a war of movement.

(16) SCHLAGKRÄFTIGE BEWEGUNG UND BEWEGLICHKEIT. [Maneuver and movement.]

The unknown author discusses the next war and bases his discussion on Liddell Hart's "The Ghost of Napoleon." The late war gave us the answer as to whether the next war should be a war of stabilization or a war of movement. We must maneuver. In "The Ghost of Napoleon" we see the development of tactics beginning with the Phalanx of Greece, then the Roman Legion. We see in kaleidoscopic form, Hannibal, Scipio, Belisar and Narses and their endeavor to keep moving. Then we come to Marignano, Pavio and Lützen, Gustavus Adolphus of Sweden, Cromwell and Condé, and finally end with Napoleon. And through all the pages we find, written or to be read between lines, the impulse to maneuver either strategically, tactically, or organizationally.

The author fully agrees with Liddell Hart and concludes that if one side has developed its tactics and organization to such an extent that it is superior to the other side, we will have a condition which will make a war of movement a certainty in the future.

(17) NEUZEITLICHE FLUGZEUGBEWAFFNUNG. [Latest armament of airplanes.] Captain May, Retired

(18) DIE DEUTSCHEN RESERVEKORPS 1914. [The German Reserve Corps 1914.]

(19) FELDBEFESTIGUNG IM CHACO-KRIEG. [Field fortification in the Chaco War.] Major Brandt

(20) KAVALLERIE UND CHEMISCHE WAFFE. [Cavalry and chemicals.] Major Kleeberg, Retired

The author suggests that cavalry should have some chemical troops attached to it, in order to place gas at such places, where for instance, the reconnaissance groups of the enemy are expected. On the other hand, friendly cavalry may run into chemical obstacles placed by the enemy and the attachment of chemical troops would assist greatly in overcoming these obstacles.

4 July 1934

(21) DIE NEUE SPORTVORSCHRIFT FÜR DIE WEHRMACHT. [The new regulations for calisthenics.]

(22) MISZACHTETE PROPHETEN. [Disregarded prophets.]

(23) DIE FRANZÖSISCHE WEHRVORLAGE VOR DEM PARLAMENT. [The French military budget.]

It is of interest to note that the French budget calls for the expenditure of 880 million francs to cover deficiencies of previously authorized construction (the nature of which is not given), 292 million francs for construction of fortifications between Montmédy and the sea, and 103 million francs for new construction for the regular army. The navy budget calls for 865 million francs.

(24) KAMPFWAGEN HER! [We need tanks.] Captain Jolas, Retired

A plea for tanks (and airplanes).

(25) GEMEINSAME VERWENDUNG SCHWERER ARTILLERIE IN HEER UND FLOTTE. [Combined use of heavy artillery by army and navy.] Lieut. Colonel Muths, Retired

The author makes it a point that cooperation between coast artillery and army (In Germany the coast artillery is a navy branch.—EDITOR) is very important during peace time in order that in time of war the heavy coast artillery guns can

be advantageously used by the army.

(26) DER NEUE STOKES-BRANDT-MINENWERFER. [The new Stokes-Brandt mortar.]

(27) MARATHONFAHRTEN ALS PRUFÜNG FÜR DIE FAHRAUSBILDUNG. [Marathon trips of animal-drawn vehicles.] Captain Bieringer

In order to test the endurance of horses and the capabilities of a column of animal-drawn vehicles, the German Army sent four and six-team wagons, loaded for the field, on an endurance trip. This test has proven that animals, if properly trained, carefully led and ridden, can travel over all kinds of terrain and obstacles, 30 miles each day.

11 July 1934

(28) DIE PSYCHOLOGISCHE AUFGABE DES HEERES. [The psychological mission of the Army.] By "Tenax"

This article brings out that every nation mechanizes its army, its industries, etc., and that the mechanization of the mind, the ability to recognize, the inventive mind, is what is needed now, and the mission of the Army is to stress and foster this. We can summarize the thought of the author in one word: "Specialization."

(29) SCHNELLES ZUSTOSZEN—METHODISCHES VORGEHEN. [Rapid contact —methodical advance.]

The thought that slowness goes hand-in-hand with safety is very much in evidence in military minds. The great majority of generals love the war of position, because here are no sudden surprises, and no need for quick decisions; here is plenty of time for thought and, besides, a great deal of personal comfort.

The author gives first an example which shows the danger of slowness. The retirement of the German Army after the battle of the Marne offered to the Allies the opportunity of inflicting a decisive defeat on the Germans, provided the Allied armies moved rapidly and exercised relentless pressure. Yet, the French Fifth Army, with a great gap (which was reported by pilots and confirmed by cavalry) in front of it, moved at the rate of about 5 miles a day, "advancing methodically" and "intrenching solidly" by order of its commander. The British Army on the left of the French Fifth Army was moving faster, but was hampered by the slowness of its neighbor. Had both armies pressed ahead unhesitatingly with a definite acceptance of risk, the war might have been shortened considerably. Slowness had assured d'Esperey a minimum of loss, but it may have cost the Allies some millions of lives.

Then the author gives an example of the opposite kind. Louis Botha had organized a number of columns for the invasion of German Southwest Africa. These columns swept forward with speed and energy. Taking risks, but acting according to a sound plan, they were successful in a remarkably short time. This was a fine example of the art of war, but, strangely enough, because it was successful, very little attention has been given to it. Yet, if that action had been as slow as in other theaters of war, the Germans would have found time to organize and train the natives the way von Lettow did in East Africa. The motto "safety first" is sound enough on roads in peace time, where nothing is gained and much endangered by taking risks, but it is not a war motto, for in war, one who takes no risks achieves nothing. We live in an era of speed. And we must introduce speed into every phase of military activity—design, production, training, planning, and movement. It is still taught that after a decision has been made, it takes 6 hours before an attack can be launched. Such an idea is a relic of position warfare and has no relation to present conditions. If infantry is to continue to exist in this era of speed, it must assimilate some of the rapidity of movement that surrounds it.

(30) GELÄNDEGÄNGIGE STRASZENPANZERWAGEN ODER KAMPFWAGEN? [Armored cars or combat cars?] Major Braun, Retired

The author raises the question about the capabilities of armored cars or combat cars to cover all kinds of terrain and comes to the conclusion that armored cars are

better suited to travel on roads, while combat cars can travel over various terrain. Both must work together, however, even though their mission necessarily differs. It should never be attempted to give the same mission to both types of cars, unless a vehicle is developed which is capable of doing the work of both.

(31) ZUSAMMENARBEIT ZWISCHEN HEER UND FLOTTE. [Cooperation between Army and Navy.] Captain v.Waldeyer-Hartz, Retired

(32) NOCH EINMAL KAVALLERIE VON EINST UND JETZT. [Cavalry—then and now.] General v.Poseck, Retired

Another article about the misuse of the German cavalry at the beginning of the War, and General v.Poseck repeats again that the main fault during the advance of the German Armies in giving missions to the army cavalry was, that the mass of the cavalry was not at the right place, viz., at the extreme right flank.

(33) BLICK NACH BELGIEN. [Belgium.] A short discussion of the political differences about Belgian defense.

(34) VERDECKTER EINSATZ SCHWERER MG. IM KAVALLERIEGEFECHT. [Covered heavy machine gun support in a cavalry fight.] Captain v.Kospoth

18 July 1934

(35) DIE DEUTSCHE HEERESKAVALLERIE AUF DEM WESTLICHEN KRIEGSSCHAUPLATZ. [German Army Cavalry on the Western Front.]

The author gives a threefold reason for the failure of the German cavalry to live up to its expectations: (1) Poor equipment and organization, (2) faulty strategical leadership, (3) faulty training and faulty tactical leadership.

(36) DIE VORFÜHRUNG DER ENGLISCHEN LUFTSTREITKRÄFTE IN HENDON. [The exhibition of English military aviation at Hendon.] Lieutenant Feuchter, Retired

(37) MINENFALLEN IM KLEINKRIEG. [Mines in a war of minor importance.]

Large mine fields are very successful against motorized armored vehicles, but it takes time to prepare a large mine field. Therefore, in wars of minor importance, time will only permit the placing of mines at important road junctions, in defiles, and on main roads in rear of the enemy. To prove his point the author gives the experience of British troops in Northwest India during 1930-31.

A punitive expedition was undertaken against revolting Afridis. The British troops had a platoon of armored cars which was stationed at Peshawar. The armored cars made daily trips from this place, having to use the same trails. The natives dug a successfully camouflaged pit on one of the trails. Fortunately, the armored cars proceeded slowly, and no damage was done when the first car sank a yard deep into the pit. The next car pulled it out and the trip continued. This incident caused some concern about protective measures, and a second pit was easily located. Then the Afridis changed their tactics. One morning a truck returned from a trip, and about 1,000 yards from the camp was thrown in the air by an explosion of a mine. Fortunately, the driver was not killed. Two days later a horse was blown in the air while returning from an exercise. A search was made for mines and bombs, and a mine was found near the place of the first explosion. A few days later another armored car was blown in the air. All this caused some interruption and interfered considerably in the planned trips. Detailed measures were taken to guard against further explosions. The conclusion which can be drawn from the above is that a well-trained organization, following a carefully prepared plan, and having sufficient mines on hand, can do much damage to motorized units.

(38) LUFTGEKÜHLTE ODER WASSERGEKÜHLTE MOTOREN FÜR KAMPFFAHRZEUGE? [Air or water-cooled engines for combat cars?] Major Brandt

(39) WIRTSCHAFT UND WEHRMACHT. [Industry and national defense.] Captain Ruprecht, Retired

The author discusses the relation between industry and national defense and states that it is imperative to have all industries come under military control in time of war. In order to have this work

smoothly, preparatory steps should be taken in time of peace.

(40) MILITÄRISCHE SIEDLUNG UND INDUSTRIALISIERUNG IN SIBIRIEN. [Military and industrial migration into Siberia.] Mittelstädt

(41) DER FREIWILLIGE ARBEITSDIENST IN USA. [The Civilian Conservation Corps in America.]

A translation of Major Guthrie's article of the same name in the "Military Engineer," January-February 1934. (See RML No. 51, page 138.)

(42) KULTURELLE FRIEDENSAUFGABEN DER REICHSMARINE. [Cultural peace missions of the German Navy.] Captain v.Waldeyer-Hartz

25 July 1934

(43) DIE POLITISCHE UND MILITÄRPOLITISCHE LAGE SÜDOSTEUROPAS. [The political and military-political situation in Southeast Europe.]

A survey of the situation in the Balkans.

(44) GLIEDERUNG GROSZER MOTORISIERTER EINHEITEN. [Organization of large motorized units.]

The organization of a mechanized division, as suggested by Colonel Argueyrolles, consists of:

- One regiment of light and medium tanks (two battalions medium, one battalion light)
- One motorized regiment of infantry
- Four battalions of artillery, one of which consists of 105-mm. guns
- One reconnaissance battalion
- One squadron of observation aviation of twelve planes
- Two batteries antiaircraft artillery
- One antitank battalion (one company attached to the infantry regiment, artillery regiment, and observation aviation)
- One battalion of engineers
- One communications company
- One battalion medical troops with one field hospital, one sanitary company (all motorized)
- One battalion quartermaster troops (two platoons gas tanks, two mobile gas tanks, two platoons repair trucks, four truck companies).

Small tanks (tankettes) are provided for the supply of munitions to the infantry. The tanks are operating under the control of battalion commanders.

(45) 1756-57—1914. Leppa

A comparison between the army of Frederick the Great and that of 1914. Both armies were of the best, but the army of 1914 had no leader of the type of Frederick the Great. The only man (Schlieffen) who could favorably compare with Frederick the Great had died shortly before the war and left an orphaned army to enter the World War.

(46) DIE SOWJETUNION ALS MILITÄRSTAAT. [The Soviet Union as a military nation.] By "M"

On 25 May, 1934, the Russian ambassador to England declared, at the international peace conference in Birmingham, that "Russia has no plans for war; on the contrary, Russia is very anxious to aid in driving the war cloud from the horizon. Russia does not believe, however, that war can be entirely abolished." According to the author, Russia trains yearly 800,000 men and has a peace-time strength of 82 infantry divisions (25 of which are first-line divisions, 47 territorial, 9 reserve, and 1 mixed division) and 15 cavalry divisions. The peace strength of Russian aviation consists of 2,800 airplanes (5,000 for 1935) and 6,000 pilots. Russia not only believes, but practices, the adage that preparedness is the best security for peace.

(47) EIGENSTÄNDIGKEIT UND GELTUNGSWERT DER AUSBILDUNG IN DER WEHRMACHT. [Standard and merit of the training in the German Army.]

(48) AUTOGIRO IM KLEINKRIEG. [Autogiros in wars of minor importance.]

The author recommends that special airplanes, such as autogiros, be used in wars of minor importance, and especially by border and municipal police.

(49) DER WIEDERAUFBAU DER REICHSMARINE. [The rebuilding of the German Navy.] Lieut.-Commander Conn, Retired

(50) DER KAVALLERIETAG 1934 IN MÜNCHEN. [The Cavalry Day 1934 in Munich.]

4 August 1934

(51) KAVALLERIE- ODER MOTORISIERUNGSPROBLEM? [Cavalry or motorization problems.]

A very interesting article which concludes with the statement, "there is no cavalry problem—it is only a problem of motorization." The author—a cavalryman—regrets that some day the cavalry will bid "adieu" to the horse, and then asks the question whether we need mobile and fast army units. He answers this question in the affirmative, but hopes that these units will be used differently than was the old army cavalry. Usually the army cavalry was held back until it could enter the battle; in other words, it was used tactically. Schlieffen wanted to use the cavalry strategically, but his idea had not penetrated sufficiently. If the use of the new mobile unit be of a tactical nature, then we have failed to gain by experience of the late war.

(52) ARTILLERIE IM NACHHUTGEFECHT. [Artillery in rear guard action.]

An abstract of this article will appear in the next number of this publication.

(53) LUFTFAHRT-RUNDSCHAU. [Survey of military and commercial aviation.] Lieutenant Feuchter, Retired

According to this survey, the French Army air corps flew a total of 300,000 hours in 1933, having 40 severe accidents, 25 of which ended in death for the pilots. The French Navy air corps flew a total of 45,000 hours with 12 accidents, causing the death of 20 men.

In England experiments are being made to use synthetic gas. This has been successful so far, and this year 7 squadrons are using the synthetic gas.

In Russia, 1,700 airplanes participated in the spring maneuvers.

(54) ZUR PSYCHOLOGIE DER DEUTSCHEN KRIEGSKRITIK. [Psychology of the German critics of the War.] Lieut. General Marx, Retired

The author decries the critics who constantly blame the German leaders.

(55) ZWEI NEUE RUSSISCHE KAVALLERIEVORSCHRIFTEN. [Two new Russian cavalry regulations.]

The new Russian cavalry regulations state in part that mechanized units, which are now an organic part of the cavalry, must act independently. The horse artillery is a powerful weapon against mechanized units, but it must also be used in support of the Russian mechanized units. Therefore it must be very mobile and should never hesitate to go into open and uncovered positions, from which fire should be opened without delay. In case of a mounted attack, such positions are the rule rather than the exception. In a meeting engagement, a quick decision without waiting too long for reports, is essential. Opportunities for mounted attacks present themselves frequently in meeting engagements. Mechanized units must participate in these attacks and should never be kept in reserve. In a defense, the cavalry must always act offensively. Withdrawal should only take place at the orders of the higher commander and machine guns must be used to cover the withdrawal, even to the point of self-sacrifice. The cavalry regiment is the basic tactical unit, reinforced by other auxiliary weapons. Mounted attacks are made by the entire regiment and not by one or two squadrons. Mounted attacks against infantry are to be made in three and against artillery in two echelons. Night attacks are habitually made on foot, without a shot being fired; the bayonet only is used. Mechanized units take up the pursuit without awaiting orders from higher headquarters. The regimental field train is trained to defend itself against possible attacks. Each eight drivers form a fire unit and are trained as such; one driver is left with each five wagons. In both regulations emphasis is laid on mounted attacks.

(56) FRANZÖSISCHE FLOTTENMANÖVER UND FLOTTENPOLITIK. [French naval maneuvers and naval policies.] Colonel Xylander, Retired

The early summer maneuvers of the French Navy were divided into two phases. The first phase consisted of strategical maneuvers, viz., the convoy of a troop transport from Morocco to the southwest coast of France; and the second phase consisted of a landing maneuver at

the eastern part of the south coast of Bretagne between Lorient and the mouth of the Loire.

(57) DIE LUFTSCHUTZÜBUNGEN BEI LONDON. [The air defense maneuvers near London.]

A short general account of the air defense maneuver near London. A detailed account of these maneuvers will be published soon.

11 August 1934

(58) DIE ÖSTERREICHISCH-UNGARISCHE ARMEE VOR 20 JAHREN. [The Austro-Hungarian Army of 20 years ago.] (I)

A resumé of the political, religious, etc., composition of the Austro-Hungarian Army before the World War.

(59) AUFKLÄRUNG IN DIE FERNE. [Distant reconnaissance.] (III)

The third installment of this article, which will be published in abstract form in the next number of the quarterly.

(60) DIE LETZTEN 200 M IM ANGRIFF. [The last 200 yards in the attack.]

The last 200 yards before reaching the enemy position are the hardest and it is during and after this time that the infantry needs some assistance. Light tanks are effective by advancing by bounds and then at a critical phase come to the assistance of the infantry. The French have developed a one-man tank about ½ yard in height and 2 yards long for such purpose. This small tank has one machine gun which is operated by a person in a prone position.

(61) RASCHES HANDELN ODER PLANMÄSZIGES VORGEHEN? [Quick action or a planned advance.]

This article is based on a previous article, "Rapid action—methodical advance" which appeared in the 11 July, 1934 number of the "Militar-Wochenblatt."

The author states that it is not certain that Botha's successful action in German Southwest Africa would have been equally successful in a European theater of war, where situations and conditions were considerably different from the ones in Africa. The modern commander must know where and when a rapid advance is advisable and when and where he must plan for a slower advance. In other words, according to the author—everything depends on the situation.

(62) LUFTGEKÜHLTE ODER WASSERGEKÜHLTE MOTOREN FÜR KAMPFFAHRZEUGE? [Air or water-cooled motors for tanks.] Lieutenant Feuchter, Retired

(63) NOCHMALS "HEER UND FLOTTE." [Army and Navy.] v.Schafer

18 August 1934

(64) KRIEGSERFAHRUNGEN DER INFANTERIE UND IHRE VERWERTUNG. [War experiences of the infantry.]

A review of two French books: "L'infanterie dans la bataille" and "Essai sur la psychology de l'infanterie" by Lieut. Colonel Bouchacourt.

(65) DIE ÖSTERREICHISCH-UNGARISCHE ARMEE VOR 20 JAHREN. [The Austro-Hungarian Army of 20 years ago.] (II)

(66) VON DER ITALIENISCHEN WEHRMACHT. UMORGANISATION DES HEERES. [The reorganization of the Italian Army.]

The Italians believe that future wars will be fought by maneuver and with this end in view, believe the organization of large units is of timely importance. The division is the basic tactical unit and consists of 9 infantry battalions, 1 machine-gun battalion, and 4 regiments of field artillery, of which several are battalions of mountain artillery. This small and light division fits all terrain; in case of necessity it can be reinforced, but under no condition will a unit be detached from it, and this "inscindibilità" is what makes this Italian division distinctive. The corps has strong field artillery organically assigned to it. At times the situation may demand the attachment of heavy artillery, antiaircraft artillery, and other weapons. It is considered the great tactical unit, which is capable of overcoming all opposition which an enemy might place in front of it. The corps consists of three divisions, one of which is always placed in reserve. In order to reinforce some of the divisions, the corps has one regiment of four battalions of militia, several battalions of "Bersaglieri," and two regiments motorized light troops and observation squadrons. The small divi-

sion has only strictly tactical missions and operates in an area designated by higher authority.

Second-line divisions will also be kept intact at all times, and its artillery, which heretofore has been detached and given to front-line divisions, will remain constantly with the division. The fast division, consisting of cavalry, bicyclists, and motorized units is used (1) as strategical advance guard, (2) for rapid entry into action at a decisive point, and (3) for pursuit.

(67) TECHNISCHER RUNDBLICK. [Technical survey.] Colonel Blumner, Retired

The author discusses the defense against an attack from the air and stresses the point that railroads are in especial need of protection and believes that armored trains equipped for antiaircraft defense are of great value. Russia has several such trains.

(68) DIE TRAGÖDIE DES UBOOTKRIEGES. [The tragedy of the "U-Boat."] Captain v.Waldeyer-Hartz, Retired

(69) RÜSTUNGEN AM STILLEN OZEAN. [Military preparation in the Pacific Ocean.] Colonel Xylander, Retired

25 August 1934

(70) DER GEGENSTOSZ DER 73. INFANTERIE-BRIGADE BEI LAHNA—ORLAU AM 23. AUGUST 1914. [The counterattack of the German 73d Infantry Brigade at Lahna—Orlau on 23 August, 1914.] Lieut. General Wilhelmi, Retired

General Wilhelmi commanded the 73d Infantry Brigade during the early part of the War. This brigade was in a defensive position north of Lahna—Allendorf on 23 August, 1914. A Russian attack was expected around the left flank of the brigade, which attack materialized during the afternoon, and about 2:30 PM the company commander of the left flank company reported that it was impossible for him to hold out against a strong Russian attack. This situation placed the brigade in a precarious position, for possession of the "Lahna and Orlau Mill" by the Russians would enable the latter to roll up the entire German position from East to West. Therefore the brigade commander decided to counterattack at 3:45 PM. This counterattack was successful. The Russians were completely surprised and withdrew about 3 miles. The Russian XV Corps commander reported that he could not advance, as he was opposed by at least 4 German divisions, while in reality 6 German infantry battalions were opposed by 16 Russian battalions.

(71) MOTORISIERUNG VON KOLONNEN. NACH RUSSISCHEN ANSICHTEN. [Motorization of supply columns according to Russian views.]

The Russian writer, M. Titarenko, in an article in the "Wojennyj Wjestnik" is of the opinion that the motorization of supply columns down to the regimental train is advantageous, and that the control of the division columns should be centralized.

He suggests the following for the division:

One munitions column, consisting of 36 3-ton trucks and 130 2-line teams.

One supply column, consisting of 25 3-ton trucks and 170 2-line teams, the latter to be used as division reserve.

One sanitary column, consisting of 16 3-ton trucks and 40 special ambulances; 10 trucks are necessary to transport the division hospital and 10 3-ton trucks and 40 special ambulances for the medical company. The veterinary hospital should remain animal-drawn.

The meat column of the division is to be abolished and to be turned over to the Army. The division should have four special trucks for the handling of fresh meat from the Army.

The bakery should be motorized or be turned over to the Army.

The bridge equipment should be motorized; this will need 13 3-ton trucks.

The ordnance repair shop should be motorized.

The division will need a total of 110 3-ton trucks and 80 special ambulances.

A regiment should have 7 3-ton trucks and 3 ambulances.

(72) DIE SOWJETUNION UND JAPAN. [The Soviet Union and Japan.]

(73) ZIVILLUFTFAHRT UND PASSIVER LUFTSCHUTZ IN FRANKREICH. [Civilian aviation and passive air defense in France.] Colonel Xylander, Retired
(74) MARATHONFAHRT VON MÜNSTER—AACHEN FÜR GESPANNE DES REICHSHEERES. [Marathon trip for animal-drawn vehicles of the German Army.] Captain Bieringer
(75) DIE VERLÄNGERUNG DER MILITÄRISCHEN AUSBILDUNGSZEIT IN DER SCHWEIZ. [The increase in the length of training in the Swiss Army.]

MILITARY ENGINEER

September-October 1934

(1) WHEN KNIGHTS WERE BOLD THIS FORTRESS FLOURISHED. Captain Dupuy
(2) THE DEVELOPMENT OF MILITARY WEAPONS SINCE THE CIVIL WAR. Captain Barker
(3) PORTABLE HIGHWAY BRIDGES. First Lieutenant Mason
(4) SECTIONAL MILITARY BRIDGES. Colonel Moore
(5) PORTABLE ALUMINUM MILITARY BRIDGE. Lieut. Colonel Growdon
(6) LESSONS FROM NAPOLEON—I. ITALY. Captain Colby
(7) ENGINEER TRAINING IN PANAMA. Captain Kohloss
(8) THE PROBLEM OF THE SAAR. Major Reynolds
(9) THE LAKE OKEECHOBEE PROJECT. Second Lieutenant Kumpe
(10) HEAVING AND DISTORTION OF PILES. Bouillon
(11) THE SEPARATION OF MAP COLORS. First Lieutenant Schilling
(12) STRATEGIC MINERAL SUPPLIES—2. MANGANESE. Major Roush
(13) TERRAIN MAP OF NEW YORK AND VICINITY. First Lieutenant Talley
(14) THE PROSPECTS FOR PEACE. Lieut. Colonel Finch

November-December 1934

(15) THE GERMAN REVOLUTION. Major Reynolds, Royal Artillery, Retired
(16) ROLLER GATES IN NAVIGATION DAMS. McAlpine
(17) THE UNIFICATION OF CHINA. Lieut. Commander Searles
(18) SOME ASPECTS OF CHEMICAL WARFARE. Major Brockman
(19) THE USE OF ENGINEERING MODELS. Karpov
(20) SOME PACIFIST FALLICIES. (Editorial)
(21) STRATEGIC MINERAL SUPPLIES—3. NICKEL. Major Roush
(22) PORTABLE HIGHWAY BRIDGES. Major Jones
(23) THE BEAM-GIRDER MILITARY BRIDGE. Major Jenkins
(24) TRAINING AND RESEARCH IN AERONAUTICAL ENGINEERING. Klemin
(25) LESSONS FROM NAPOLEON—2. AUSTERLITZ. Captain Colby

MILITARY SURGEON

September 1934

(1) CHIMBORAZO HOSPITAL, CONFEDERATE STATES ARMY. AMERICA'S LARGEST MILITARY HOSPITAL. Major Hume
(2) THE NATIONAL GUARD INSTRUCTOR. Major Ervin

October 1934

(3) MEDICAL PROGRESS AND THE WAR. Colonel Bispham
(4) REPORT ON SEVENTH INTERNATIONAL CONGRESS OF MILITARY MEDICINE AND PHARMACY, MADRID, SPAIN, MAY-JUNE, 1933. Captain Bainbridge
(5) THE WORK OF THE HEALTH DEPARTMENT OF THE PANAMA CANAL DURING THE PAST FIVE YEARS. Curry
(6) THE PRACTICAL VALUE OF TRAINING GAINED BY THE CAMP SURGEONS ON DUTY WITH THE CIVILIAN CONSERVATION CORPS. Lieutenant Hennessy

November 1934

(7) MEDICAL PROGRESS AND THE WAR. Colonel Bispham
(8) THE RELATION OF FOREIGN SERVICE TO MORBIDITY AND MORTALITY RATES DURING THE PAST DECADE. Lieut. Colonel Lull
(9) EMOTIONAL STABILITY IN YOUNG MEN AFTER BEING IN A C.C.C. CAMP FOR TWO MONTHS. Lieutenant Luppens

NAVAL INSTITUTE PROCEEDINGS

August 1934

(1) LEADERSHIP. Rear Admiral Pratt
(2) VOYAGE OF THE "SACRAMENTO." Macarthur
(3) WHAT PRICE VICTORY? Lieut. Commander Lovette
(4) THE HISTORY OF THE INTERNATIONAL CODE. Commander Mead

(5) COMMUNICATIONS FOR ITALIAN TRANSATLANTIC FLIGHT. Lieut. Commander Stone

September 1934

(6) IS DEFEAT INEVITABLE? Lieutenant Eller
(7) MOMENTOUS DISCREPANCIES. Lieutenant Wood
(8) THE CONFEDERATE STATES NAVAL ACADEMY. Lieutenant Folk
(9) THE TECHNICAL ASPECTS OF JUTLAND. Lieut. Commander Brownson
(10) THE NAVAL ACADEMY—A SUGGESTED MISSION. Captain Barleon
(11) TRYON AND THE "VICTORIA." Lieutenant Bassler
(12) THE GERMAN GUNBOAT THAT BECAME A YANKEE. Hanks

October 1934

(13) KEEPING THE UNITED STATES NEUTRAL. Rear Admiral Phelps
(14) THE FREEDOM OF THE SEAS. Captain Meyers
(15) CHOOSE PEACE OR WAR. Lieutenant Thornton
(16) THE CAPTURE OF THE "U-58." Lieut. Commander Carney
(17) THE UNITED STATES AND RUSSIA IN WORLD EQUILIBRIUM. Lieut. Commander Bryant
(18) JAPAN'S DRIVE FOR WORLD TRADE. Captain Knox
(19) COMPARATIVE STRENGTH OF NAVIES. FROM INFORMATION RECEIVED UP TO AUGUST 1, 1934.

PIONIERE (Germany)

BY CAPTAIN G.B. GUENTHER, CAVALRY

May 1934

(1) KAMPFPIONIERE. [Combat engineers.]
(2) AUSBILDEN DER PIONIERKOMPANIE. [Training of an engineer company.]
(3) EINE SPERRÜBUNG. [An exercise in demolitions.]

Combined tactical and demolition exercises must be held periodically. The mere study of the theory will not suffice to maintain a proper standard for engineer troops.

During the preparation for and conduct of such exercises numerous arrangements and decisions must be made by the officer in charge. These are as follows: (1) The selection of terrain in available areas; (2) notifications of inhabitants of the exercises and approval from civil authorities; (3) a statement of the policies and purpose of the exercise; (4) designation of troops to take part; (5) tactical situations and orders to start the exercise for both forces taking part; (6) time schedules and controls stating time during which each side can operate; (7) instructions to umpires; (8) technical data which controls the employment of demolitions; (9) instructions concerning cooperation between the infantry and engineers.

In this exercise engineers are attached to infantry. It is the responsibility of the commander of the engineers to select the type, location, and method of employment of the demolitions. When no engineers are attached to infantry it must then execute demolitions with its organic engineer detachments.

Infantry acting alone will have to limit the employment of demolitions to antitank and armored-car defense and the destruction of important bridges to cover an exposed flank. In retirements it will have to be content with the destruction of the main roads and construction of obstacles while it is under the protection of the rear guard.

(4) BRÜCKENSPRENGUNGEN IM WELTKRIEGE. [Demolition of bridges in the World War.]

The author, by use of illustrations, shows the correct and incorrect method of rendering bridges unserviceable. The destruction of all stone or masonry bridges requires a great deal of time and supplies. The following points are emphasized in the destruction of all bridges: (1) The supports or piers should be blown out so as to drop the floor of the bridge. One support having been destroyed, the floor between it and two others will have fallen. This will greatly delay the repair by the enemy. (2) In destroying a bridge with an iron superstructure the pier or support should likewise be destroyed.

The personnel executing the destruction should consider (1) how to render the bridge unserviceable with the least amount of time and material; (2) the structure to be so damaged as to require the greatest amount of time and labor on the

part of the enemy to repair it for further use.

(5) UBUNGSFAHRT IM WINTER. [Practice march in winter.]

(6) SPRENGSTOFFE UND IHRE WIRKUNG. [Explosives and their effect.]

(7) MOTORKRAFT BEI SPERRUNGEN. [The use of motor-power in constructing obstacles.]

(8) SPERRUNGEN BEIM RÜCKZUG DER 9. ARMEE 1914. [Use of demolitions and obstacles during the retirement of the Ninth Army in 1914.]

The course of operations of the German Ninth Army in its advance, retirement, and final advance after a regrouping of its units is the subject of the narrative. The operations take place in Upper Silesia and Poland in the advance on Warsaw. The main rivers, the Vistula, Pilica, and Warthe and the most important railroads such as the Vienna—Warsaw, Vistula Railroad, and the Lodz—Ostrowiec Railroad were the important terrain features which figured in the employment of demolitions.

The three most useful phases of the employment of demolitions were as follows:

(a) During the advance between the Vistula and the Pilica the left flank of the army was greatly protected by skillful use of obstacles and demolitions.

(b) Maneuver of demolitions during the retirement from Warsaw, Lowicz, and finally to Lodz. The protection afforded against an enveloping maneuver and flank attack were important features of the employment of demolitions.

(c) While the retirement was in progress the enemy had to be held at certain positions while German troops, by encircling maneuvers, slowed the Russian advance. This delay then enabled the Germans to prepare obstacles and demolitions which later greatly assisted in the final retirement and the reorganization.

Due to the scarcity of good roads, the railroads carried the burden of the evacuation and supply services. Through the skillful employment of demolitions the railheads on the Russian side were of necessity placed so far to the rear that supply and consequently the movement and advance of troops were very materially delayed. The first demolitions were performed by cavalry detachments and if the situation permitted later, the engineer detachments completed the thorough destruction on the railroad sections, bridges, and tunnels.

In view of the planned German advance after the reorganization and retirement, the responsibility of the degree of destruction rested on the Army engineer officer. Permanent constructions, such as stations, workshops, and storehouses were destroyed only to the extent that would temporarily deny their use to the Russians.

The author gives a brief discussion as to the results which could have been expected in this campaign if the modern equipment and methods of transportation had been available to the engineer and demolition services in 1914. He stresses the importance of attaching mobile units of engineers to the advance guards of major units. Demolitions will be of the greatest service to the side which first gets its engineer and demolition detachments to the critical areas.

(9) EISENBAHNZERSTÖRUNG IM RÜCKEN DES FEINDES. [Railroad destruction and demolition in rear of the enemy.]

Historical examples of this nature are numerous, but the author recalls the remarkable execution of the assigned mission of Captain Neumeister, German Army, in January, 1871.

The German Second Army, commanded by Prince Friedrich Carl, was south of Paris attacking northwest against the Loire Army under General Chanzy. Prince Carl's V Corps, on the evening of 9 January, had a vigorous fight in the vicinity of La Chartre sur Loire and had reached a position to the north. The enemy stood to the north of the left flank and had planned to hold until reinforcements arrived by way of the Le Mans—Tours Railroad. The interruption of traffic on this line would delay or even prevent the movement of French troops and reinforcements and very likely this would decide the results of the impending French attack.

Captain Neumeister received orders to destroy the railroad in the vicinity of Ecommoy. His detachment of 2 engineer officers, 32 Jägers, and 7 engineers, moved during an icy, cold night in a snow storm, executed the required demolitions, and returned without the loss of a man.

The French Army commander, not having the use of the railroad on the 10th, could not move his troops as planned, and as a result the Prussians penetrated the French right wing. The surrender of the Loire Army prevented its later destruction.

(10) SPERRUNG VON SEEN. [Demolitions and obstacles on lakes.]

Lakes, rivers, and canals, during seasons when the surface does not freeze sufficiently to bear loads, are considered important military obstacles. However, as soon as ice forms thick enough to bear military loads they lose their defensive value and must be given due consideration in defensive situations and military operations.

Two historical examples are mentioned by the author: the operations in the vicinity of Narotsch Lake on the Eastern Front in 1916, and the operations around the Mauer Lakes in 1914-1915.

The author shows the methods used by the Germans to place demolitions and obstacles on the frozen Mauer Lakes to deny the Russians the use of the surfaces for offensive operations. The use of searchlights, wire entanglements, electric power, extensive communication systems, mines of all descriptions, and alarm signals were all coordinated in an efficient system of defense.

The technical features of the construction of mines and other apparatus for the defense of frozen lakes are covered in detail in this article.

(11) SPERRUNGEN IN FREMDEN HEEREN. [Review of demolitions and obstacles as treated in foreign armies.]

In the majority of cases the regulations and texts on demolitions and obstacles issued prior to the World War were based on experiences and their employment in the Franco-Prussian War of 1870-71. The German instructions were contained in two paragraphs of the 1908 Field Service Regulations. In April, 1898 the French had published regulations on the placing of mines. In 1914 the Belgians had published instructions to engineers and General Inspectors of Demolitions. They considered this as an important feature in their national protection.

The French regulations which have served more or less as a guide for the Polish and Czech Armies, have been studied by the Germans. They disclose some important features of the employment of demolitions which generally follow this plan: (a) Decision of the commander as to the extent of demolitions; (b) advanced plan by the engineer officer attached to the plan of the commander for the employment of demolitions; (c) classification of demolitions into groups; (d) allottment of engineer personnel to the major units for the operations; (e) estimates of materials required for projects and the effect upon the transportation situation. No demolitions to be executed without written authority or order from the supreme commander, and only in a real emergency will subordinate commanders order the discharge of demolitions.

Aids to the employment of demolitions and obstacles are (a) well trained and efficient mobile (motorized) troops; (b) aviation by using aerial bombs to attack lines of communication which front-line engineer units cannot reach; (c) the flooding of battle areas by dams, blowing up of canals or by changing the course of rivers; (d) chemical agents of all types to prevent enemy from reconstructing bridges, railroads, etc.; (e) incendiary bombs to burn down wooden bridges; (f) wire entanglements; (g) special type of contact tank mines; (h) electric power and equipment; (i) motor-driven road wreckers, saws, and pneumatic drills for placing charges.

The underlying purposes of all demolitions are to (a) delay the enemy in order to put the advantage of time on the side of the force using them; (b) deny the enemy the use of certain terrain or supplies.

(12) WIRKUNG VON FLIEGERBOMBEN AUF EINE STRASZENBRÜCKE. [Effects of aerial bombing on a highway bridge.]

(13) CHEMISCHE KAMPFSTOFFE IM SPERRDIENST DES AUSLANDES. [Use of chemicals by foreign countries.]

The experimental employment of chemicals for war is not permitted in Germany by the Treaty of Versailles. The information available as to their uses is therefore limited to that found in foreign publications.

Russia, Czechoslovakia, and France have been very active in the experimental field. France has openly stated that the poisoning of wide strips of terrain cannot be objected to as an international question as long as the location is made known to the attacker.

Recent publications indicate that employment of chemicals with all types of obstacles and demolitions is greatly favored by most countries as an effective means of operating against the enemy. Thus far no country seems to have disclosed the discovery of any new poisonous or deadly chemical. Counter gas measures by use of protective clothing and neutralizing chemicals appears to be the normal practice.

Improvements in aviation and the experiments conducted with it in the laying of chemicals in liquid and spray form have made it a recognized aid to the use of chemicals in warfare.

(14) KAMPFWAGENABWEHR DURCH MINEN. [The use of mines in antitank defense.]

Experiences in the World War have forced the military world to acknowledge that tank mines, next to artillery, are the most effective antitank defense.

Due to the short period of time and labor it takes to lay a tank mine field and their effectiveness, this is considered a valuable means of blocking off a sector of the front so that the tanks cannot break through without considerable losses. The question in doubt seems to be to the method of laying the fields. If obstacles are constructed to limit the space for tanks to maneuver, the placing of mines is simple, but when tanks have a choice of terrain the question arises as to the best method of arranging the charges. A discussion is given as to the most suitable methods of laying mines. Two types of mines are recommended; first, a light type to damage the tracks, and second, a heavy charge mine to destroy the tank body. The patterns of the mine field will conform to the width of the hostile tank tracks and the laying to be controlled by the commander of the major sectors of the front.

(15) EISSPRENGUNGEN. [Use of explosives against ice.]

QUARTERMASTER REVIEW

July-August 1934

(1) THE PASSING OF OLD FORT SCHUYLER. Captain Holt

(2) FORT MONROE. Lieut. Colonel Arthur

(3) A C.C.C. COMMISSARY. Captain Cohn

(4) THE QUARTERMASTER STOREHOUSE OF KNOWLEDGE. PROBLEM NO. 4

September-October 1934

(5) HISTORICAL ARMY POSTS—MADISON AND PLATTSBURG BARRACKS

(6) PERU'S LOST VALLEY. Shippee

(7) ACTIVITIES OF THE ARMY TRANSPORT SERVICE. Captain Holt

(8) THE ARMY RATION. HOW ISSUED AND ACCOUNTED FOR. Wilson

(9) THE POST TRANSPORTATION OFFICER. Lieutenant Hastings

(10) THE QUARTERMASTER STOREHOUSE OF KNOWLEDGE. PROBLEM NO. 5

REVISTA DEL EJERCITO Y DE LA MARINA (Mexico)

BY MAJOR M.B. RIDGWAY, INFANTRY

April 1934

(1) TÁCTICA GENERAL. [General tactics.] Captain Grajales

A conference, delivered in the "Escuela Superior de Guerra" to the second-year class as an introduction to the course it was entering, and which was designed to prepare the class to function as commanders and assistants to commanders, in the triple tasks of planning, preparing, and conducting operations.

(2) LA BATALLA DE TULTITLÁN. [The Battle of Tultitlán.] Colonel García

A resumé of the battle which marked the end of the Toltec Empire and its culture.

(3) FUNCIONAMIENTO DE LAS TRANSMISIONES. [Functioning of communications.] Major Alvarez

(4) EL OFICIAL COMO CONDUCTOR DE MASAS. [The officer as a leader of masses.] Lieut. Colonel Zárate M.

A brief and well presented outline of such essential qualities required in a military leader as boldness, courage in assuming responsibility, creative imagination, common sense, loyalty, unselfishness, and a passion for the truth.

(5) EL CANÓN PARIS. [The Paris cannon.] Captain Contreras

A brief account of the German long-range gun, which fired on Paris in 1918, and its ballistics.

(6) LA AVIACIÓN DE OBSERVACIÓN DE LA ARTILLERIÁ. [Artillery observation aviation.] Captain Ochoa

(7) UN AVIÓN-ESCUELA DE BOMBARDEO. [Bombardment training plane.] de Rysky

A description of the use of a fast small biplane, using small bombs, as a training ship in bombing exercises, in order to avoid the greater expense of actually operating the bombers themselves.

(8) LOS BUQUES DE SUPERFICIE. [Surface ships.] Lieutenant Aznar

A comparative review of the fleets of the major and of some minor powers.

(9) ORGANIZACIÓN DEL EJÉRCITO DEL PERÚ. [Organization of the Peruvian Army.] Lieut. Colonel Grimaldi

(10) EL EJÉRCITO Y SUS NECESIDADES. [The army and its requirements.] Lieutenant Barrios

Inviting attention to the requirements of the Mexican Army in artillery and artillery ammunition.

(11) LOS DEBERES SOCIALES DEL EJÉRCITO. [The social obligations of the army.] Lieutenant González

May 1934

(12) CÓMO PIENSAN NUESTROS JEFES Y OFICIALES ACERCA DE LA ORGANIZACIÓN DEL ARMA DE CABALLERÍA EN MEXICO. [Thoughts of our officers on the organization of the cavalry arm in Mexico.]

Under this title appear three articles, one each by Lieut. Colonel Violante, Captain Hernandez, and Lieutenant Omana; each article giving the author's detailed and tabulated ideas on organization, armament, and equipment.

(13) ORIGEN DEL EMPLEO MILITAR DE LOS GASES DE COMBATE. PRINCIPALES AGRESIVOS QUÍMICOS EMPLEADOS EN LA GRAN GUERRA. [Origin of the military use of gas in warfare. Principal chemicals employed in the World War.] Lieut. Colonel Zárate M.

BY FIRST LIEUT. M.D. TAYLOR, F.A.

June 1934

(14) LA SECCIÓN SEGUNDA EN LOS ESTADOS MAYORES. [The second section of general staffs.] Captain Carsi

(15) LA SECCIÓN SEGUNDA. [The second section.] Lieut. Colonel Sweeney

(16) LA INTERPRETACIÓN Y LA SINTESIS DE LOS INFORMES POR LA SECCIÓN SEGUNDA DE UN CUERPO DE EJÉRCITO ESTUDIO DE UN CASO CONCRETO. [The interpretation and synthesis of enemy information by G-2 of a corps. Study of a concrete case.]

This is a reproduction of the study of Lieutenant Colonel Henry Martin in the "Revue Militaire Francaise," April, 1934, entitled "L'interprétation et la Synthèse des Renseignements."

(17) PRINCIPIOS FUNDAMENTALES DE BALÍSTICA. [Fundamental principles of ballistics.] Colonel Catalán

(18) LA IMPORTANCIA DE LA CABALLERÍA Y LA NECESIDAD DE REPARACIÓN DE NUESTROS CUADROS. [The importance of the cavalry and the need of building up our organizations.] Colonel Badillo

(19) LA DECISIÓN. [The decision.] Captain Grajales

(20) TECNOLOGÍA MILITAR Y MOVILIZACIÓN INDUSTRIAL. [Military technology and industrial mobilization.] Major Flores

(21) NOCIONES ELEMENTALES SOBRE LOS AGENTES QUIMÍCOS DE GUERRA. [Elementary notions of chemical agents in war.] Colonel Zárate M.

(22) CABLES SECCIONADOS PARA PUENTES COLGANTES O SUSPENDIDOS. [Sectionalized cables for suspension bridges.]

REVUE DE L'ARMEE DE L'AIR (France)

BY FIRST LIEUT. JOSEPH I. GREENE, INFANTRY

April 1934

(1) LA PREMIÈRE CROISIÈRE AÉRIENNE D'ESCADRE EN AFRIQUE FRANCAISE. [The first squadron flight across French Africa.] Captain Pennès

An illustrated account of the cruise of General Vuillemin's squadron, which covered 13,900 miles in 34 stages between 8 November and 24 December, 1933, beginning the cruise with 30 planes and ending with 28. Opening with a brief account of General Vuillemin's pioneer, single-plane flight across the Sahara in February and March, 1920, and of other aerial and automobile crossings of equatorial Africa since then, the article describes the squadron flight of last year in interesting detail.

The cruise began from the air field at Istres on the southern coast of France. With one stop in Spain, the squadron crossed the Mediterranean to Rabat, Morocco, and thence flew south 1,700 miles across the Sahara to Gao. Then, turning west, it went more than 1,000 miles to St. Louis and Dakar, seaports on Africa's big western bulge. The return trip east was continued on to Fort Lamy, near Lake Chad, and then south as far as Bangui, almost on the equator. The flight toward home covered ground flown over on the trip out as far as Adrar, near the Sahara's northern edge. Here the squadron veered to the northeast in order to reach Tunis, and then skirted the Mediterranean to Algiers, Oran, and Meknes, thence back across the sea and Spain to Istres again.

The two casualties occurred on the first and second days of flight. One was caused by collision in formation and the other by a bad landing in fog. Neither caused injury to occupants.

The greatest difficulty of the long journey was the dust of the African landing fields, which fouled the engines and caused many extra overhauls. At a temporary landing field in the middle of the Sahara, a dust storm overtook the squadron. All but three planes were able to take the air, however, before the wind rose to 50 miles an hour. The subflight left behind came through the storm without damage but had to clean out gas lines, plugs, and other engine parts before continuing. Once in the air, this subflight had to fly 20 or 30 feet off the ground for several hundred miles in order to follow the automobile trail that formed the one guide across the desert.

After a safe forced landing near Lake Chad it was necessary to tear down a number of large anthills in clearing runway for taking off again.

May 1934

(2) DOUHET ET LA DOCTRINE DE L'UNITÉ DE MATÉRIEL. [Douhet and the doctrine of unity of matériel.] (I) Chief Engineer Rougeron

A careful analysis of General Douhet's belief in the heavy all-purpose military fighting plane. Neither speed nor armament is the determining factor, but armor. Planes must be protected against heavy machine guns' fire and antiaircraft shell fragments. The aerial "battle cruiser" of Douhet cannot carry the necessary armor, but the light single-seater fighting plane can. Hence, armored planes of this type must be developed at once, for they are superior to all other types.

(3) L'AVIATION MARITIME. [Naval aviation.] (Conclusion) Lieutenant Marinier

In the history of France, the Navy has always been misunderstood and its value underrated because of its comparative isolation. The sailor is never seen at work; only at play. Is the aviation to be subject to the same reproaches and lack of comprehension as the Navy, or shall it, by dominating earth and sea and bringing together the combatants of all arms, realize a fruitful collaboration of effort—this without destroying the esprit of the older arms? The question is left for time to answer.

(4) L'ÉPILOGUE AÉRO-NAVAL DES DARDANELLES. [Aero-naval activities at the Dardanelles.] Lieutenant Barjot

A brief history of the aero-naval blockade of the Bulgarian and

Turkish coasts by the British Navy in 1917; aerial raids on Constantinople and the fight over Murdros, in the same year; the last raid of the "Goeben" and the "Breslau" and the bombing of the first in 1918. In 5 days planes loosed 180 bombs, weighing 15 tons, at the ship, which was aground on a sand bar. One went down the rear smoke stack and another struck the rail just opposite. The other 178 were misses. The bomb-sights were very inferior. Antiaircraft fire from the mainland not far distant brought down one plane on the last day.

(5) DÉFENSE D'UN GROUPE D'AVIONS DE BOMBARDEMENT CONTRE DES MONOPLACES DE CHASSE. [The defense of a group of bombardment planes against pursuit planes.]

Illustrated summary of an article in the "Soviet Courier of Aviation," August, 1932, showing the use of 12 fighting planes to protect 18 bombardment planes.

(6) LE MATÉRIEL DES AVIATIONS NATIONALES. [The air equipment of nations.]

Detailed and well-illustrated description of new French planes: the "Caudron C.181," the "Dewoitine D. 430," the "Bernard Colonial Trimotor," the "Nieuport-Delage 590," the "Potez 400," the "Romano R. 16," the "Trimotor L.H. 70," and the "Weymann 66." Also a description of the "Douglas D.C. 2" and the two-motor "Martin."

(7) MACHINE À CALCULER ET SON APPLICATION AUX APPAREILS DE POINTAGE POUR TIRS D'ARTILLERIE SUR BUTS MOBILES, NOTAMMENT EN VUE DU TIR CONTRE AVIONS. [A calculating machine, and its use with the laying mechanism of artillery in firing at moving targets, with especial reference to antiaircraft fire.]

(8) PERFECTIONNEMENTS APPORTÉS AUX MITRAILLEUSES MONTÉES À BORD DES AÉROPLANES. [Improvements on machine guns mounted on airplanes.] A new synchronizing mechanism.

(9) PROCÉDÉ POUR LA RÉGLAGE DE LA ROUTE DES VÉHICULES AÉRIENS LORSQU'IL Y A DU VENT. [Method of keeping airplanes on the course when there is a wind.] An invention to show both speed and direction of natural wind during flight.

(10) LE VOYAGE DU "LATÉCOÈRE 300" "CROIX DU SUD" EN AMÉRIQUE. [The voyage of the Latécoère 300 "Southern Cross" in America.]

(11) LA PRÉSENTATION DES AVIONS PROTOTYPES AUX OFFICIERS DE RÉSERVE. [The examination of standard type airplanes by reserve officers.]

June 1934

(12) DOUHET ET LA DOCTRINE DE L'UNITÉ DE MATÉRIEL. [Douhet and the doctrine of unity of matériel.] (II) Chief Engineer Rougeron

Further detailed argument for the use of the light combat plane instead of the heavier "cruiser" of General Douhet, tempered by the statement that the evolution of the airplane cannot be forced without endangering its value in all departments of warfare.

(13) DE QUELQUES CONTRIBUTIONS ETRANGÈRES A LA NAVIGATION AÉRIENNE ASTRONOMIQUE. [Some foreign contributions to the astronomy of aerial navigation.] Captain Bastide

A mathematical description of Dr. Guiseppe Severino's simplified method of astronomical observation in aerial navigation—a method that requires a "shot" at only one star at a time, instead of at two. Also, a similar analysis of the method of Dr. Guiseppe Simeon, who examines closely the causes of errors in aerial navigation but fails to arrive at a solution as satisfactory as that of Dr. Severino.

(14) L'AVIATION DE D.C.A. EN 1917. [Antiaircraft aviation in 1917.] Major Lucas

Outline of the activities, composition, and matériel of the French defensive aerial units during the third year of the War.

(15) HISTOIRE DU PROJECTILE EXPLOSIF DANS LE COMBAT AÉRIEN. [History of the explosive bullet in aerial combat.] Lieutenant Barjot

First used by the British against German Zeppelins in 1914, the explosive bullet was soon employed by all armies in all kinds of air fighting.

(16) LE MATÉRIEL DES AVIATIONS NATIONALES. [The air equipment of nations.]

Description of the French "Mureaux 113 R.2," a list of Japanese

types, and a description of the fast British motor boats used in the training for bombardment against moving naval targets, by the Royal Air Force.

(17) ETUDE TECHNOLOGIQUE, THÉORIQUE ET CRITIQUE DU VISEUR DE BOMBARDEMENT ESTOPPEY. [A technological, theoretical, and critical analysis of the Estoppey bomb sight.]

A 24-page detailed study, illustrated by drawings.

REVUE D'ARTILLERIE (France)

BY FIRST LIEUTENANT M.D. TAYLOR, F.A.

April 1934

(1) AVANTAGES DE LA MÉTHODE RÉGLEMENTAIRE DE CALCUL DE RELÈVEMENT PAR LE POINT APPROCHÉ. [Advantages of the regulation manner of resection by calculation based on a single point.] Lieut. Colonel Guillemet

(2) DÉTACHEMENT DE LIAISON. [The liaison detachment.] Lieut. Colonel Mazenod

The artillery battalion of the French Army has a single liaison detachment. In the normal case of the battalion in direct support of a regiment of infantry, this detachment, consisting of an officer and several noncommissioned officers, will remain at the regimental command post. The liaison officer informs the artillery of the needs of the infantry and the infantry of the capabilities of the artillery.

In order to accomplish the first half of this dual mission, the liaison officer detaches a noncommissioned officer as a liaison agent with each front-line battalion. This agent is without telephone or radio but has two soldiers to act as runners or as visual signalmen. The role of the liaison agent is a difficult one. He acts as technical adviser to the infantry battalion commander. He locates and reports the enemy weapons which are troubling the infantry. In some cases, he adjusts the fire of the batteries on these objectives. He must depend on the wire system of the infantry to transmit his messages or, as a last resort, upon his two runner-signalmen.

The importance of liaison duty makes it essential to find well-trained officers and noncommissioned officers to make up the detachments. In time of war, it seems too much to hope that noncommissioned officers can be found to perform well the above-mentioned duties of liaison agent. Whenever possible, an officer should be selected for these duties. This will be possible without change in the present organization when the artillery battalion is supporting an infantry battalion instead of a regiment. In this case, the entire liaison detachment can be sent to the C.P. of the infantry battalion.

(3) LE MONT-VALÉRIEN PENDANT LE SIÈGE DE PARIS (1870-1871). [Mount Valerien during the siege of Paris, 1870-1871.] (I) Laulan

A history of the fortress outside of Paris during the Franco-Prussian War.

(4) L'HÉLICE À CALCUL. [The helical slide rule.]

The description of a recent invention by Lieutenant Lafay which is a slide rule of considerable accuracy and of extraordinary compactness.

(5) UN PROPHÈTE DE LA GUERRE CHIMIQUE. [A prophet of chemical warfare.] Lieut. Colonel Grenouillet

In a series of articles in an illustrated weekly "La Caricature," a writer named Robida in about 1880 made some surprisingly accurate prophesies regarding the use of chemicals in the wars of the twentieth century.

May 1934

(6) ETUDE DES DENSITÉS D'ARTILLERIE RÉALISÉES AU COURS DES OFFENSIVES FRANCAISES DE 1918. [Study of artillery densities in the French offensives of 1918.] (I) General Fournier

It will be recalled that the directive of 31 October, 1917 evaluated the requirements of the French Army for the offensive action of large units. As regards the artillery, three degrees of reinforcement were contemplated:

Requirements	Light batteries per km.	Medium and heavy batteries for destruction fire per km.	Medium and heavy batteries for counterbattery per km.	Trench artillery per km. (batteries of 12 pieces)
Maximum	18	10	8	3½
Normal	14	7	6	2½
Minimum	10	5	5	2

These requirements of artillery were satisfied in the heavily reinforced attacks of the end of 1917. Notable instances are the following attacks:

Army	Front of attack	Light artillery pieces	Medium and heavy pieces
English, 7 June, 1917	16 km. (Messines)	1600	800
French, 31 July, 1917	4 km. (Ypres)	240	373
French, 20-26 August, 1917	17 km. (Verdun)	948	1384
French, 23 October, 1917	10 km. (Malmaison)	624	986

In 1918, however, the requirements of the directive of 31 October, 1917 were often not fulfilled. This fact is explained by the change in the character of the combat and also to the determination of General Foch to organize attacks with short delay, to simplify the orders issued, and to assign wider fronts of attack to the divisions.

From 1917 to the middle of 1918 every effort was made to increase the strength of the artillery in guns and in ammunition for the 1918 campaign. While these efforts were partially successful, the French high command did not consider that major offensive action would be possible before 1919.

The following table shows the artillery densities achieved in some of the 1918 operations. In each case, the density is compared to that considered desirable by the directive of 31 October, 1917.

THE COUNTERATTACK OF 11 JUNE, 1918

Units engaged	Front of attack	Light batteries	Medium and heavy batteries for destruction fire	Medium and heavy batteries for counterbattery
5 divisions	9 km. (St. Maur to Le Tronquoy	93 10+per km. (Approximately the "normal" requirement)	28 3 per km. (Less than the "minimum" requirement)	10 1 per km. (Much less than the "minimum" requirement)

THE OFFENSIVE OF THE TENTH ARMY, 18 JULY, 1918—LIGHT ARTILLERY

XVIII Corps	I Corps	XX Corps	XXX Corps	XI Corps
33 batteries	39 batteries	69 batteries	54 batteries	36 batteries
This Corps did not attack	Front of attack 7 km.	Front of attack 7 km.	Front of attack 6 km.	Front of attack 4 km.
	8 batteries per km.	10 batteries per km.	9 batteries per km.	9 batteries per km.
	Less than "minimum" requirement	About the "minimum" requirement	Less than the "minimum" requirement	Less than the "minimum" requirement

The average density for the entire front: 9 batteries per km. This density was obtained by using, in addition to organic 75 regiments, light portée regiments of the G.H.Q. reserve and the organic regiments of reserve divisions.

MEDIUM AND HEAVY ARTILLERY FOR DESTRUCTION FIRES

XVIII Corps	I Corps	XX Corps	XXX Corps	XI Corps
16 batteries	20 batteries	25 batteries	18 batteries	15 batteries
This corps did not attack	3 batteries per km.	3.5 batteries per km.	3 batteries per km.	4 batteries per km.

In all cases the artillery was considerably less than the "minimum" requirement.

MEDIUM AND HEAVY ARTILLERY FOR COUNTERBATTERY

8 batteries	27 batteries	27 batteries	10 batteries	23 batteries
This corps did not attack	Total: 97 batteries			
	Density = 3.5+ batteries per km. Much less than the "minimum" requirement.			

Resumé for the attack of the Tenth Army:

Light batteries	9 batteries per km.
Medium and heavy batteries for destructions	3 batteries per km.
Counterbattery	3.5 batteries per km.
Trench artillery	147 pieces
Railway artillery	8 pieces

(7) UTILISATION D'UNE BASE COURTE POUR L'OBSERVATION CONJUGÉE. GÉNÉRALISATION DE LA MÉTHODE DELÉGUE. [Use of a short base line in bilateral observation.] Lieut. Colonel Roumégous

A generalization of the method of Colonel Delégue previously described in the June 1932 number of the "Revue d'Artillerie."

(8) LE MONT-VALÉRIAN PENDANT LE SIÈGE DE PARIS (1870-1871). [Mount Valerien during the siege of Paris, 1870-1871.] (II) Laulan

(9) LE POINTAGE "PAR LA LIGNE D'OMBRE" POUR L'ARTILLERIE DE CAMPAGNE. [The shadow line method laying light artillery.] Major Falk

An abstracted article from the "Field Artillery Journal" of January-February 1934.

(10) LA PÉNÉTRATION DES PROJECTILES D'INFANTERIE. [The penetration of infantry bullets.] Major d'Ervau

A report describing the experiments of the Rheinische Metallwaaren und Maschinenfabrik to check the theories of the German engineer Gerlich in the matter of the penetration powers of infantry bullets.

(11) ALLEMAGNE: LA DCA-VF. [Railway antiaircraft artillery in Germany.]

An article abstracted from "Wehr und Waffen", December 1933 discusses the possibilities of railway antiaircraft artillery. Such artillery would serve well in the defense of railroad centers, stations, and industrial centers provided with spurs and switching facilities. A battery could be loaded compactly with ammunition, range-finder, director, and searchlight apparatus on four railroad cars. Such a battery would offer a small target to enemy bombs and artillery projectiles. It could escort supply and troop trains. Above all, it would have great strategical mobility.

(12) ANGLETERRE: LES POSSIBILITÉS DE L'ARMÉE BRITANNIQUE. [The possibilities of the British Army.]

General Baratier concludes in the "Times" of 10 December, 1933, that in case of another war, England could raise armies of about the same size as in the last conflict, but in the beginning, the forces available would be inferior to those of 1914.

June 1934

(13) COMPARAISON DES PRINCIPALES ARMES ET MATÉRIELS UTILISÉS PENDANT LA GUERRE DE 1870-1871 PAR LES DEUX BELLIGÉRANTS. [Comparison of arms and matériel used by the belligerants in the War of 1870.] General Challéat

This study is an extract from the first volume of General Challeat's "Histoire technique de l'Artillerie de terre en France pendant un siecle, 1816-1919." (Technical history of terrestrial artillery in France during the century 1816-1919.)

(14) ETUDE DES DENSITÉS D'ARTILLERIE RÉALISÉES AU COURS DES OFFENSIVES FRANCAISES DE 1918. [Study of artillery densities in the French offensives of 1918.] (II) General Fournier

This study continues from the May issue. The following tables summarize the artillery densities in the attacks studied.

ATTACK OF THE SIXTH ARMY, 18 JULY, 1918

Units engaged	Front of attack	Light artillery batteries	Medium and heavy batteries	Railway artillery batteries
8 divisions	26 km.	112 (4 btrys. per km. Much less than the "minimum" requirement.)	119 (4.5 btrys. per km. About ½ of the "minimum" requirement.)	2

The army had in addition about 171 tanks.

ATTACK OF THE FIRST ARMY, 8 AUGUST, 1918

Corps	Light Artillery	Medium and heavy Howitzers	Medium and heavy Guns	Remarks
XXXI	69 btrys.	48 btrys.	37 btrys.	Light artillery density—10 btrys. per km.—"minimum" requirement. Medium and heavy howitzer density—7 btrys. per km. Medium and heavy gun density—5 btrys. per km.
IX	45 btrys.	24 btrys.	39 btrys.	Light artillery density—7.5 btrys. per km. Medium and heavy howitzer density—4 btrys. per km. Medium and heavy gun density—2.5 btrys. per km.
X	27 btrys.	16 btrys.	13 btrys.	Light artillery density—5+ btrys. per km. Medium and heavy howitzer density—3 btrys. per km. Medium and heavy gun density—2.5 btrys. per km.
XXXV	54 btrys.	16 btrys.	16 btrys.	Light artillery density—6 btrys. per km. Medium and heavy howitzer density—2 btrys. per km. Medium and heavy gun density—2 btrys. per km.

The scheme of maneuver adopted by the First Army permitted of the rapid shifting of artillery from one corps front to another. Thus, the temporary reinforcement of a corps might exceed the above-cited figures, whereas the army total remained constant.

ATTACK OF THE FOURTH ARMY AT MONTDIDIER, 26 SEPTEMBER, 1918

The artillery strength of the Fourth Army was considered inadequate by the army commander, General Gouraud, prior to the attack, as the front was perhaps the most strongly organized of all the German positions. General Gouraud requested additional artillery, citing the directive of 31 October, 1918. His request was rejected on the grounds that the disorganization and loss of morale among the Germans authorized a reduction in the means required for an attack. The following table shows the strength in artillery made available to the Fourth Army:

Light artillery	Medium and heavy howitzers	Medium and heavy guns	Trench artillery	Railway artillery
111 battalions	65 battalions + 2 btrys.	38 battalions + 7 btrys.	20 btrys.	80 pieces

Summary:

Light artillery density.....14 btrys. per km.
Medium and heavy artillery density.....12 btrys. per km.
} Roughly, the "normal" requirement

(15) LE RÔLE DE L'ARTILLERIE DANS LA VICTOIRE ROUMAINE DE MARASTI. [The rôle of the artillery in the Rumanian victory of Marasti.] Laulan

An historical study of an operation on the Carpathian front, 11-24 July, 1917.

(16) COORDONNÉES POLAIRES ET CORRECTION DE STATION. [Polar coordinates in computing off-sets.] Major d'Aillières

(17) VOLTAIRE ET SON CHARIOT DE GUERRE 1756-1757—1769-1770. [Voltaire and his war chariot.] Hemerdinger

REVUE DE CAVALERIE (France)

BY LIEUT. COL. N.B. BRISCOE, CAVALRY

May-June 1934

(1) GOUVERNONS VERS LE LARGE. [Let us look at the broad picture.] (III) Colonel Argueyrolles

(2) OCCASIONS PERDUES. [Lost opportunities.] (I) Major Gazin

In a book which appeared in 1920 a high officer, briefly analyzing the role of cavalry in the World War, wrote:

"During the continuous retreat across Belgium in 1914, how many among the officers who marched in the rear-guards, at times actually disorganized by the speed of the retreat, the fatigue of nights without sleep and days without food, have thought with terror of the consequences of the sudden appearance in the intervals of our columns of some determined squadrons or platoons."

General Joffre's "Memoirs" show that the high command had the same fears. The French Fifth Army, menaced by a great envelopment, was particularly threatened. On 31 August the German I Cavalry Corps was directed on the rear of Lanrezac. If the vigor of execution had matched the boldness of conception it would have gone hard with the reestablishment of the Allied disposition.

It is precisely such occasions that the author wishes to study, the lost opportunity of large mounted forces of which details have been missed in favor of miraculous events like 6 September.

Some criticize the German cavalry for lack of aggressiveness, but the same criticism should be applied to Russian and French cavalry. All had the training and the esprit to do better, but all were handicapped by their high commands which wore them down so that the principal weapon, the horse, and the prime characteristic, mobility, were reduced in effectiveness. This caused forced combat on foot for which they were not trained.

The quick shift from one flank to the other, from one force to a neighboring one, the frequent changes of direction of action, with loss of detached units that could not be recalled, loss of time and loss of distance that had been gained—all caused more or less ineffective movements by the cavalry.

The author generalizes along these lines in a most interesting and instructive manner and then comes down to cases. He gives an account of the activities of von Marwitz's Corps just after the Battle of Guise. He takes each unit, with maps, through the period 30 August-1 September and shows that fatigue, lack of provisions, forage and water, and a certain lack of aggressiveness due to these conditions was what permitted the escape of the Fifth Army and that it was really an escape.

This is the first article of a series.

(3) L'IRLANDE HIPPIQUE EN 1933. [Horse situation in Ireland in 1933.] de Chevigny

The author discusses the map of Ireland from the horse standpoint and carries this idea forward to the different breeds represented.

(4) DISPOSITIF POUR L'ÉTUDE DU RÉGLAGE DU TIR AUX ENGINS D'ACCOMPAGNEMENT. [An arrangement for study of the manipulation of fire of the accompanying weapons.] Captain de Torquat

The author describes a terrain board similar to a sand table built up of chicken wire with straw bound to it. The firer estimates the range, orders the charge, etc. (for 37-mm. guns), and directs the fire orally. The terrain board is made to scale, and the instructors indicate the impact resulting from the fire ordered, applying the table of probable errors. The burst is indicated by a white ball on a wand

which is inserted through the straw and wire from the under side.

Apparently a very good method of instruction, but a variation only of the usual methods used for artillery fire.

July-August 1934

(5) GOUVERNONS VERS LE LARGE. [Let us look at the broad picture.] (IV) Colonel Argueyrolles

(6) OCCASIONS PERDUES. [Lost opportunities.] (II) Major Gazin

(7) LA CAVALERIE DANS LES OPÉRATIONS DU HAUT-ATLAS (AVRIL-AOÛT 1933). [Cavalry in the High Atlas Operations of April-August 1933.] (I) By Major "B"

During the spring and summer of 1933 a number of preliminary operations were undertaken to establish key positions, secure mountain passes, and provide security for the lines of communication for a campaign into the High-Atlas country of Algeria. This necessitated marching and fighting in altitudes running up to 10,000 feet in country consisting of a mountainous desert, which failed to cramp the style of the cavalry, the whole affair progressing on fire and movement and the horse and motorized elements working well in cooperation.

The account follows particularly the operations of the command of General Giraud, which "comprised both horse and motorized units—truly modern cavalry—profiting by every occasion for employment, accomplishing missions of great importance and value especially by its characteristic of mobility." Rapidly occupied positions, pursuit of retreating enemy, and, in retirement, the breaking of contact.

"Mobility" in the High-Atlas country sounds paradoxical at first, but cavalry is no more subordinated to the terrain than infantry. Barb horses are as mobile as the much-used mules of modern infantry or artillery, and horses are most necessary for the quick establishment of bridgeheads for the debouchment of columns. Armored vehicles have no more trouble getting about in mountains than the trucks which are necessary for supply, but like trucks, are slaves of the roads until favorable terrain is found.

It was found that cavalry could reconnoiter and protect columns without retarding them, and that cavalry detachments could outflank the enemy positions and cut his lines of communication, even though forced to cross "passes dominated by wholly inaccessible crests, the squadrons reduced to moving on foot, leading their horses, but this circumstance" (mirabile dictu!) does not prevent them any more than it would the infantry.

The enemy was the Mountaineer Berber, "warrior by temperament, accustomed to subsist on nothing, hardened to fatigue," a good climber, and armed with repeating rifles of 1874 or 1886 and a few captured automatic weapons badly served. These warriors usually acted in small groups, extremely mobile, and taking full advantage of the terrain and presenting a wide front.

The large part of the article is a detailed account of the various operations, to be read with the maps in view. Two photos of country resembling the desert of the southwest, and three maps accompany the article.

(8) ETUDE SUR LE FRANCHISSEMENT D'UN COURS D'EAU PAR UNE UNITÉ DE DRAGONS PORTÉS. [Study of a river crossing by dragoons portée.] Captain Simon

A tactical situation necessitates making a crossing at a particular point necessary. The unit is a battalion of dragoons portée. The river is 125 to 175 feet wide, height of bank over 30 inches, meadows on both sides bordered by poplars.

Two platoons were given the mission of crossing automatic arms. Each sent one naked swimmer across with a light cord to establish a ferry. Meanwhile the platoons constructed rafts; one of four empty gasoline cans (illustration appears to show about ten-gallon square cans), branches, cord, and wire; and one of six sacks (apparently canvas) stuffed with straw, six planks (carried by track-laying vehicles), and rope.

These rafts carried the impedimenta, arms, and clothes of the men who either swam or held to the rafts.

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Construction and crossing took 20 minutes.

Meanwhile the battalion engineer section began constructing a foot bridge in sections of material furnished by the engineers, though local material would have done.

Rafts constructed on the Habert sacks (regimental bridge equipment) carried the vehicles across.

The height of the banks was fortunate, requiring no change.

Six sketches and six photos are a great help in learning the details of construction of the means of crossing.

REVUE D'INFANTERIE (France)

BY FIRST LIEUT. C.T. LANHAM, INFANTRY

February 1934

(1) LA MANOEUVRE DES FEUX ET LE COMPARTIMENTAGE DU TERRAIN. [Fire maneuver and the compartmenting of terrain.] General Touchon

The author states that the World War repeatedly demonstrated the difficulty (and frequently the impossibility) the attack encountered when endeavoring to advance beyond the topographical crest of a captured ridge line. He cites Vimy and various actions in the Vosges Mountains in support of his contention. His solution to the problem consists primarily of the more efficacious use of firepower, from the "flank" ridges of one compartment against the hostile defense in adjacent compartments. He demonstrates his idea by means of two illustrative problems.

(2) RÉFLEXIONS SUR LA DÉFENSE CONTRE LES CHARS. [Some reflections on antitank defense.] Lieut. Colonel Martin

Colonel Martin states that the defense must make the utmost use of such natural obstacles as woods, villages, rivers, marshes, escarpments, etc., to counter the tank threat. He also advocates the creation of an antitank unit as an organic part of the infantry regiment and an antitank company as an organic part of the division. He conceives the possibility of an "antitank tank" playing the same role on land that the torpedo boat destroyer plays at sea.

(3) AUTRES RÉFLEXIONS SUR LA DÉFENSE CONTRE LES CHARS. [Other reflections on antitank defense.] Major Perré

Major Perré supplements the foregoing article with some shrewd observations. For instance, he reminds the reader that the hostile artillery drove the defense from such prominent landmarks as villages in the last war and that that same artillery, probably augmented, will be on hand in the next war. He analyzes Colonel Martin's suggested use of river lines showing wherein it conflicts with French defensive doctrine. He does not believe that the Halgar ultra bullet will solve the tank problem, but sees great value in the light tank mine. Neither article should be read alone.

(4) BASE DE FEUX.—BASE DE DISCUSSION. [Base of fire. Base of discussion.] Major Favatier

Shortly after the automatic rifle, model 1924, was adopted by the French Army, it was shown that this improved weapon was capable of handling a number of tasks that had previously been reserved exclusively for machine guns. This gradually led to a new conception for the use of the two weapons in the attack. French regulations of 1929 definitely set forth and defined their respective spheres. The assaulting waves are now known as the "fire echelon" in contradistinction to the "base of fire," or fire base, composed of the elaborately coordinated fires of grouped machine guns supporting the attack. This new set-up is the focus of a bitter dispute between two factions referred to by the author as "traditionalists" and "progressives." He sets forth the arguments of each side and then proffers a detailed study of the subject on his own.

(5) LES CHENILLETTES DE RAVITAILLEMENT. ["Caterpillars" for supply.] Captain LaPorte

A thorough study of the supply possibilities offered by the tractor-trailer type of vehicle. The author treats the subject under three main heads: (1) New elements of the problem (technical, tactical); (2) Organization of the service of supply;

(3) Operation of the service of supply.

March 1934

(6) BELGAE GALLORUM ROBUR. [The Belgians, the bravest of the Gauls.] Lieut. Colonel Bouha, Belgian Army

A brief sketch of the martial history of the Belgians from the Roman conquest under Caesar to the German invasion in 1914.

(7) ESSAI DE SOLUTION AU THÈME D'APPLICATION TACTIQUE PROPOSÉ AU CONCOURS D'ENTRÉE À L'ECOLE SUPÉRIEURE DE GUERRE. [A solution to the tactical problem given in the competitive examination for entrance to the Ecole Supérieure de Guerre.] By "X"

(8) UN CAS CONCRET D'EMPLOI DE GROUPEMENTS DE MITRAILLEUSES TIRANT À GRANDES PORTÉES: BATAILLE DE LA MALMAISON (OCTOBRE 1917). [A concrete example of the grouping of machine guns for long range firing: The Battle of Malmaison, October 1917.] Major Devouges

(9) MISE EN OEUVRE DE LA BASE DE FEUX. [Organization and operation of a base of fire.] Major Jourdan

This study deals primarily with the organization and operation of the firepower of the infantry battalion in all phases of the attack. Special emphasis is given the machine gun. The 37-mm. gun, the trench mortar, and the automatic rifle are briefly treated. The technical and tactical aspects of the author's plan are discussed in considerable detail.

(10) L'ORGANISATION DE L'OBSERVATION DANS LA DÉFENSIVE: ÉTUDE D'UN CAS CONCRET DANS LE CADRE D'UN RÉGIMENT D'INFANTERIE. [The organization of observation in the defense: an illustrative study of the problem in an infantry regiment.] Major Mathieu

Three tactical principles are enunciated for the plan of observation: (1) To see without being seen; (2) to maintain continuity of observation with reference to both time and space; and (3) to provide for constant collaboration between the observation and the communication agencies.

One command principle is given: The commander conceives the plan of observation as a whole; the intelligence officer establishes the various observation agencies in accordance with this plan and assures their continuous operation.

April 1934

(11) DEUX PRÉCURSEURS: UN PENSEUR MILITAIRE; UN JEUNE PROPHÈTE. [Two prophets of the future: A military thinker; A young prophet.] Major Nigote and Lieutenant Fliecz

The "Revue d'Infanterie" reprints in part, and annotates, an article by Major Nigote that appeared in "Le Journal des Sciences Militaire" in 1893, and three articles by Lieutenant Fliecz that appeared in the same publication in 1911, 1912, and 1913. In the light of the World War, the prophecies of both these officers are astounding. They not only attacked the dogma of "the offensive" in a day when any deviation from that magic formula was considered stupidity, but they deduced by sheer logic that the next war would drag on interminably in the trenches and that the strange sight of "the empty battlefield" would be the rule. Lieutenant Fliecz recognized the terrific upheaval that the newly invented machine gun would bring to warfare. He preached the pick and shovel, camouflage, armored cars, and armored infantry as a solution.

These two officers met ridicule then. France might well make reparation now in marble and bronze as an eternal reminder that wisdom is not de facto a monopoly of rank.

(12) LES INFANTERIES ÉTRANGÈRES: VII. L'INFANTERIE BELGE. [Foreign infantry: VII.—The Belgian infantry.] Lieut. Colonel Bouha, Belgian Army

This article details the organization, armament, training, and tactical doctrines of the Belgian infantry.

(13) OBSERVATION UNILATÉRALE, AJUSTAGE DU TIR. [Fire adjustment from a non-axial observation post.] Major Trebous

A technical discussion of fire adjustment for the infantry mortar and artillery in direct support from an observation post considerably removed from the line gun—target.

(14) MANGIENNES (10 AOUT 1914). [Battle of Mangiennes, 10 August, 1914.] Lieut. Colonel Pugens

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A detailed historical account from both the French and German viewpoints of the action at Mangiennes on 10 August, 1914. The author is particularly concerned with showing the lasting buoyant effects of even a minor success on the first day of battle and the corresponding depression young troops suffer through defeat.

May 1934

(15) LA MENTALITÉ MILITAIRE ET LA DOCTRINE DE GUERRE DE L'ALLEMAGNE. [The German military mind and doctrine of war.] Captain Quenot

Andre Maurois states (and his statement is probably apocryphal) that at the Inter-Allied Council in 1918 there was a "German Section," which was kept in ignorance of the allied projects and whose mission was to think like the enemy. With this anecdote as the apparent source of inspiration, Captain Quenot proceeds to constitute himself a one-man "German Section" and think after the manner of the traditional enemy of France. From Germany's history, her wars, and her great men he builds up his concept of the German military mind and doctrine of war. The article is cleverly conceived, the analysis keen, and the conclusions well supported.

(16) UNE SOLUTION DU THÈME TACTIQUE DONNÉ AU CONCOURS D'ENTRÉE À L'ECOLE SUPÉRIEURE DE GUERRE. [A solution to the tactical problem given in the competitive entrance examination for the Ecole Superieure de Guerre.] By Major "Y"

(17) RÉFLEXIONS SUR LES BASES DE FEUX. [Reflections concerning the "base of fire."] Lieut. Colonel Martin

A further discussion of the much-mooted question of the "base of fire." See the February and March 1934 issues of "Revue d'Infanterie."

(18) LES INFANTERIES ÉTRANGÈRES: VIII. L'INFANTERIE HÉLLÉNIQUE. [Foreign infantry: VIII—The Greek infantry.] By Major "C"

(19) L'OBSERVATION DU TIR DES ENGINS D'ACCOMPAGNEMENT. [Observation of the fire of infantry accompanying weapons.] Captain de L'Eprevier

A routine discussion of the technique of observation and adjustment of the fires of infantry accompanying weapons.

June 1934

(20) INSTRUCTIONS DU MARÉCHAL DE BELLE-ISLE À SON FILS SUR LES DEVOIRS DU CHEF MILITAIRE. [The advice of the Marshal of Belle-Isle to his son concerning the duties of a military leader.]

This dashing and picturesque Marshal of eighteenth-century France composes a remarkable letter of advice to his son who has just been given command of a regiment. Two hundred years of war and peace have not lessened its value for the leader of men.

(21) COMBAT EN RETRAITE: REPLI 1918. [Rear guard action by the 43d Battalion (164th French Division), on 30 May, 1918.] By Major "M"

The detailed experiences of the French 43d Battalion of Light Infantry in the debacle along the Chemin des Dames in 1918. The first part of this narrative appeared in the October 1933 number of the "Revue d'Infanterie."

(22) RECHERCHES SUR L'INSTRUCTION DU TIR DANS L'INFANTERIE MODERNE. [Instruction in rifle marksmanship for modern infantry.] Major Loustaunau-Lacau, and Captains Brunelli and Andrei, and Sergeant Maissa

Following a brief appreciation of the value of rifle marksmanship in battle, the authors introduce an exceedingly complicated and delicate sighting and aiming device. What merit it possesses seems to be outweighed by its complexity.

(23) LA RECHERCHE DU RENSEIGNEMENT DANS LES UNITÉS DE CHARS. [The G-2 problem in tank units.] Captain Ferré

A thoughtful article setting forth the crying need of tank commanders for intelligent and relevant information. The author stresses the point that intelligence personnel who have to do with tanks must be tank-minded. Without this tank "slant" much of the information gathered will be valueless to tank units, and many vital tank factors will be overlooked.

(24) NOTE SUR L'OBSERVATION ET LE RÉGLAGE DU TIR DES ENGINS D'ACCOMPAGNEMENT. [Notes on the observation and adjustment of the fires of infantry accompanying weapons.] Major Paillé

A reply to the article by Major Trebous on non-axial observation which appeared in the April 1934 issue of "Revue d'Infanterie."

REVUE DU GENIE MILITAIRE
(France)

BY MAJOR P.C. BULLARD,
CORPS OF ENGINEERS

May-June 1934

(1) LES PASSAGES DE LA MEUSE PAR LES ALLEMANDS EN AOÛT 1914, D'APRÈS LE LIVRE DU GÉNÉRAL KOENIGSDORFER. [The crossing of the Meuse by the Germans in August, 1914.] Review by Major Mets of a portion of General Koenigsdorfer's book, "Beispiele von Fluszübergängen," and translated into French by Major Aubert.

A review of this article is a far cry from the original book, but it may be well to mention some of the points which have been emphasized.

Crossing by ferrying will ordinarily last a day, the bridge will be built the following night, and a second day will be necessary for the main force to be across and ready for an organized attack. Only in exceptionally favorable circumstances can this time be reduced to one day.

It is futile to expect to capture and use an existing bridge defended by the enemy unless the attempt is accompanied by ferrying. Even if taken, the bridge would not be intact.

A town on the defender's side of the river is so easily held that it is a poor point at which to force a crossing.

Especially is emphasized the great difficulties and small chances of success in a river crossing attack that is purely frontal and without a main effort.

It was a fault not to attempt any crossing on the undefended part of the Meuse.

General Koenigsdorfer's book is highly praised. (See also review in RML No. 51, page 116.)

(2) NOTE SUR UN TYPE DE PROFILOMÈTRE. [Discussion of a type of diagram for calculation of areas of profiles.] Captain Sillard

For use in road and railroad construction.

(3) UN NOUVEAU PROCÉDÉ DE REVÊTEMENT DE ROUTE. [A new process for road paving.] Deschamps

A method of proportioning, mixing, and placing concrete for road work.

(4) EXERCICE SUR LA CARTE: EMPLOI DU GÉNIE DIVISIONNAIRE DANS LA DÉFENSIVE. [Map problem. Employment of divisional engineers in the defensive.] Lt. Col. Jaubert

The problem treats of demolitions (including the influence of terrain), organization of the ground, labor and materials required, reconnaissance, distribution of work, and orders issued.

July-August 1934

(5) EVASIONS. [Escapes.] Major Nicollas

The author tells interestingly the story of his three attempts (two unsuccessful) at escape from German prison camps.

(6) NOTE SUR LES INONDATIONS. [Remarks on inundations.] Lieut. Colonel Rousseau

Calculations of the heights of dams and the time required for streams to fill them with water.

(7) LE PROBLÈME DU CHAUFFAGE DES LOCAUX PAR L'AIR CONDITIONNÉ. [The problem of heating rooms with conditioned air.] Captain Simon

(8) EXERCICE SUR LA CARTE (SAPEURS DE CHEMIN DE FER). LE BATAILLON DE SAPEURS DE CHEMINS DE FER DANS LA MARCHE EN RETRAITE. [Map problem. Railroad engineers. The battalion of railroad engineers during the retreat.]

Situation only; the solution will appear later. The general situation is that which would have occurred along the Seine to the northwest of Paris if the Germans had carried further the v.Schlieffen plan. The situation includes instructions to the engineers as to priorities of demolitions.

REVUE MILITAIRE FRANCAISE

(France)

BY MAJOR C.A. WILLOUGHBY, INFANTRY

April 1934

(1) UNE DOCTRINE MILITAIRE NATIONALE EN ALLEMAGNE. ESPACE ET PEUPLE PENDANT LA GUERRE MONDIALE, DU PROFESSEUR EWALD BANSE. [A national-military doctrine for Germany.] By "X . ."

An anonymous review of "Raum und Volk im Weltkriege," [Space and People during the World War], by Banse. (See review of this work on page 165.) The book created a sensation in Europe, especially in francophile circles; it was officially suppressed by the German government, but it is noted that Prof. Banse continues to function as Professor of Military Science at the University of Brunswick. He may be regarded as still enjoying official favor; consequently, his work is to be considered as an expression of popular thought tactly approved of by official authority.

Banse's work is a study of the World War, enumerating (a) military-geographic, (b) economic, and (c) psychologic factors. At every turn there is the reflection that with more ruthlessness, or sense of "realities," Germany might have anticipated her enemies; the War was a struggle between "the conservative Nordic" (Kultur) and the "inorganic, revolutionary, superficial esprit" of the Western powers (!). The author is evidently impressed with the idea of an inherent, racial superiority which is a keynote of the present German drive for "Aryanism."

(2) LA RECONNAISSANCE DE L'ENNEMI PAR L'ARMÉE DE L'AIR ET LA MANOEUVRE STRATÉGIQUE DES ARMÉES DE TERRE. [Reconnaissance by air forces and the strategic maneuver of terrestrial armies.] Général Armengaud

(The author, one of the foremost airmen of France, commanded the bombardment wing against the Riffs in 1925.)

The author points out that strategic reconnaissance was originally assigned cavalry. However, as in 1914, so in the future, large cavalry masses on strategic reconnaissance missions will be stopped by counter-reconnaissance screens behind which the enemy will develop his strategic maneuver; consequently the air is the best route for this reconnaissance.

The difficulties of strategic aerial reconnaissance are many. It is a special problem for several reasons:

(1) It is distant reconnaissance (300-400 miles radius).

(2) If the opponent desires secrecy, he will make every effort with his pursuit and antiaircraft to secure aerial interdiction over a certain geographic area.

Consequently, there are only two ways in which this reconnaissance may be accomplished:

(a) First, efforts must be made to dispatch reconnaissance planes in flights of three. These planes must be different from ordinary observation planes. They must have a speed equal or superior to enemy pursuit. If this method fails, there remains only one other.

(b) Next, the important strategic reconnaissance missions must be given the air force as a whole. The air force, using all means at its disposal, must break through the enemy aerial interdiction and obtain information of enemy strategic movements in any way it can.

The author backs up this contention with numerous examples from the last war.

He proves that the side committed, a priori, to the strategic defensive or strategic counteroffensive (readiness) will obtain the maximum efficiency from the use of its aerial reconnaissance as only large forces in movement are picked up with accuracy. In other words, the side which takes the strategic offensive may have to expect faulty aerial reconnaissance.

(3) L'INTERPRÉTATION ET LA SYNTHÉSE DES RENSEIGNEMENTS PAR UN 2E BUREAU DE CORPS D'ARMÉE. [Interpretation of intelligence. G-2 of a corps.] Lieut.-Colonel Henry-Martin

A map maneuver on military intelligence within the corps, taken from the refresher-course for reserve officers at the Ecole Superieure de Guerre, 1933. The situation is based on a corps in retirement, the X Corps, operating on the left wing of an army, south of Amiens—a situation more or less analogous

to a World War situation at the end of August 1914.

The process of thought and labor on the part of G-2, is traced from (a) the decision of the commander which guides G-2 into specific channels of investigation; (b) the development of G-2 work sheets, and reports, covering collection and evaluation of enemy information; to (c) the conclusions, in answer to the commander's directive. Stress is laid on eliminating any hypothesis not based on known facts; special efforts are concentrated solely on "enemy possibilities, that may adversely affect the commander's decision, or plan." The factor of enemy movement, or displacement, is gone into with great care, to avoid the error committed, for example, on 22 August, 1914, where G-2 of the French Fourth Army made estimates of the situation, based on facts that were 48 hours old, whereas the enemy had made important movements in that period. [NOTE: This article will be continued, under the title "Collection and Dissemination of G-2 Information within the Corps," in the July, 1934 number.]

(4) CE QU'IL FAUT SAVOIR DE LA YOUGOSLAVIE ET DE L'ARMÉE YOUGOSLAVE. [Notes on the Yugoslavian Army.] Lieut.-Colonel Delmas

In view of the close rapprochement in international politics, between France and Yugoslavia, this article is of more interest to Frenchmen than to other nationalities. Primarily with the financial, economic, and political assistance of France, Yugoslavia has developed a national force on modern lines; their army is recruited from peasant stock, certainly proven as the best fighting material—the Serbian Army of the World War established a tradition of suffering as well as valour. The present organization comprises: 17 infantry divisions, 2 cavalry divisions; there is only one infantry brigade per division, and the number of battalions range from 8 to 12; there seems to be a shortage of technical troops.

May 1934

(5) LA STRATÉGIE ALLEMANDE EN 1918. [German strategy in 1918.] (V) General Loizeau

General Loizeau severely criticizes the strategy of Ludendorff in 1918. With nearly a fifth of his entire force engulfed in the Chateau Thierry pocket in June, 1918, Ludendorff undertook an offensive in Champagne and along the Marne on 15 July, in order (according to Ludendorff) to draw reserves from Flanders and Amiens so that a decisive thrust could later be made in Flanders. According to Loizeau, the real reason for this offensive was to better the condition of the Seventh Army which was threatened with a double envelopment in the Chateau-Thierry salient.

Loizeau points out that it would have been a much better solution to have executed a strategic retirement, not to the old line of March, 1918, but even still farther to the rear, say to the Meuse, south of Namur. Then he could have held the front with relatively few divisions and reconstituted the German Army. Certainly had he done this the war would not have ended in 1918.

(6) FRANCHISSEMENT DES COURS D'EAU EN PÉRIODE DE MOUVEMENT. LA BATAILLE DE LA MEUSE (25 AU 28 AOÛT 1914). [River crossings in a war of movement. The Battle of the Meuse, 25 and 28 August, 1914.] (IV) General Baills and Captain Gazin

A continuation of a previous study which will be translated by a local student, in the current school year. The article in the February number contains the bulk of practical data; this instalment is a narrative of events.

(7) DONNÉES STATISQUES SUR LES FORCES FRANCAISES DE 1914-1918. [Statistical data: French forces 1914-1918.] (I) Lieut.-Colonel Larcher

In the February, March, and April, 1933 numbers of the "Revue," statistical summaries appeared pertaining to the strength and casualties of the Central Powers. This is the first of two articles, dealing with the French forces in a similar manner. There is an interesting tabulation concerning the number of higher formations (divisions and corps) and an analysis of casualties. It is interesting to note that the French were able to maintain a fair level of strength (2,846,000 men)

throughout the War, in fact, their strength in 1918 exceeded that of 1915; this is due, of course, to British and American intervention. The graphs show the effect of great offensives on the rate of consumption of units, and their replacement by new organization; at certain periods the extent of front, and relative density of divisions were such as to preclude any offensive action whatever. This series should be of value as a time-saving compilation of a very important factor in the conduct of the World War.

(8) LA CARTE DE L'ALGÉRIE. [The maps of Algiers.] Martin

A review of the development of the maps of this important French colonial possession.

June 1934

(9) LA STRATÉGIE ALLEMANDE EN 1918. [German strategy in 1918.] (VI) General Loizeau

This is the last instalment of General Loizeau's brilliant series. This instalment deals, in large strokes, with the collapse of the German Armies, after the Allied counteroffensive of 8 August. Loizeau charges Ludendorff with unjustifiable optimism regarding the power of resistance of his armies; only a rapid retirement to positions of favorable strategic character, such as the lihe of the Meuse, could have enabled the German armies to face the winter. Such a retirement on a grand scale, was possible only on the basis of previous reconnaissance and previous organization of the lines to be held. Ludendorff failed in making these arrangements; after 8 August it was too late to make improvisations. Ludendorff is further charged with "living from day to day," without great strategic objectives, contrary to the masterly doctrine of Foch; on the one hand, the author sees a fatal tendency toward frontal attack, resulting in untenable "pockets," on the other, the application of the Napoleonic flank attack. While Ludendorff is thus classified as a local "tactician," rather than a great commander, in the sense of Napoleon, his immense labor in organization and preparation of his great offensives is freely acknowledged; Ludendorff is regarded as as an incomparable Chief of Staff.

(10) LA FRONTIÈRE DU RHIN. GÉOGRAPHIE POLITIQUE. [The Rhine frontier.] Ancel

A military-geographic study of France's new frontier, the Rhine. It appears that Strassbourg, under French administration, has become a port of greater importance than ever, the tonnage having reached 5,000,000 a year.

(11) FRANCHISSEMENT DES COURS D'EAU EN PÉRIODE DE MOUVEMENT. LA BATAILLE DE LA MEUSE (25 AU 28 AOÛT 1914). [River crossings in a war of movement. The Battle of the Meuse, 25 and 28 August, 1914.] (V) General Baills and Captain Gazin

This is the final instalment of Baills' series. [To be translated, in full, as an individual research paper.] The article is chiefly devoted to comparative lessons. The rapid advance of the German Fourth Army was principally due to the partial demolitions of the bridges across the Meuse; they were easily repaired; some bridges fell into the hands of the Germans practically intact. Evidently, the French contemplated a counteroffensive, and hesitated to destroy the bridges permanently; the Germans did the same thing on the Marne, under similar expectations. There is an interesting comparison between the crossing of the Meuse in 1914, and the Marne in 1918. The value of tanks, on the defensive, is brought out, as they are available before the attacker can bring his own across.

(12) DONNÉES STATISTIQUES SUR LES FORCES FRANCAISES DE 1914-1918. [Statistical data: French forces 1914-1918.] (II) Lieut.-Colonel Larcher

Continuation of a previously published article. A comparison is established between length of fronts, allotted to divisions, at various periods and the type of operation. There are tabulations on the number of divisions engaged in various battles and the frequency of their employment. While casualties are an elusive factor, there are some interesting figures; the total losses in 1914 amounted to 955,000—considerably more than the whole

peace strength of the French Army before the war.

(13) VAUBAN. [Vauban.] Lieutenant Chombart de Lauwe

A biographical study of the great military engineer.

RIVISTA DI ARTIGLIERIA E GENIO
(Italy)

BY MAJOR F. DURING, INFANTRY

March-April 1934

(1) ORGANIZZAZIONE ED ESECUZIONE DELLA CONTROBATTERIA IN GUERRA DI MOVIMENTO. [Organization and execution of counterbattery fire in a war of movement.] (I) General Fautilli

(2) MOTORIZZAZIONE E MECANNIZZAZIONE NELL'ESERCITO FRANCESE. [Motorization and mechanization in France.] Lieut. Colonel Infante

According to the author France intends to motorize 65% of her artillery and 20% of her infantry, and to organize 4 to 6 infantry divisions, entirely motorized; 4 to 6 cavalry divisions are to be converted into light mixed divisions. France also intends to organize independent (mechanized) brigades.

(3) LA GUERRA DI MINA NEL CONFLITTO MONDIALE. PREVISIONI PER IL FUTURO. [Mines and counter-mines in the World War.] Captain Izzo

Captain Izzo mentions four instances on the Austro-Italian front in which mining operations were carried out on a large scale.

The Col di Lama gave the Austrians a good observation post, overlooking the Italian trenches. The Italians drove a long galley underneath it and, after three months continuous labor fired a mine under the Austrian observation post, which was then captured and held. In the three other instances mining and counter-mining operations were carried on by both sides with varying success.

On the French front mine warfare was carried on from the end of 1914. It reached its maximum intensity in 1916. After that the moral strain on the troops was found to be so great, and the results obtained so slight in proportion to the energy expended, that both sides gradually dropped it. During the progress of mine warfare, charges continued to be increased until 200 tons of explosive came to be looked upon as a normal charge.

Mines may or may not find a place in future warfare, but the experience gained in the World War is well worth studying.

(4) BERSAGLI DELL'ARTIGLIERIA DA CAMPAGNA E METODI DI TIRO PIU CONVENIENTI PER NEUTRALIZZARLI. [Artillery targets and a method of neutralizing them.] Colonel Berardi

(5) LA TELEFONIA INTERURBANA ED IL SUO IMPIEGO IN CASO DI GUERRA. [The use of commercial telephone lines in war.] Lieut. Colonel Gatta

May 1934

(6) ORGANIZZAZIONE ED ESECUZIONE DELLA CONTROBATTERIA IN GUERRA DI MOVIMENTO. [Organization and execution of counterbattery fire in a war of movement.] (II) General Fautilli

(7) L'OSSERVAZIONE AEROSTATICA. [Aerial observation.] Lieut. Colonel Liuzzi

Lieut. Colonel Liuzzi asks the question whether observation from captive balloons is as necessary in the future, as it has been in the past. He gives the answer in the affirmative, and proceeds to give his reasons.

A balloon must be anchored at a distance of 3 to 5 miles from the enemy front line; its height must be regulated by circumstances, but is not likely to exceed 4,500 feet. Compared with an aeroplane, a balloon offers a much better and steadier view. It is not, however, suited for work in high mountains, nor is it adapted to operations in the movement stage.

The author next deals with the various objects for balloon observation, and the methods of signalling. As regards the control of captive balloons, they should—in the author's opinion—be directly under the orders of the artillery commander, and not under the division or corps commanders. As a rule, a corps artillery commander would have one observation balloon under his orders, an army commander might have two or three.

Finally, he discusses the defense of captive balloons. The main

danger to which they are exposed is from aeroplanes, armed with machine guns firing incendiary bullets. In France, defense for a balloon is provided by three (two-gun) groups of antiaircraft machine guns, capable of all-round fire, forming an equilateral triangle, with sides not exceeding 500 yards in length. Modern automatic arms are, however, inefficient at heights exceeding 3,000 feet, so that the strata above that level must be swept by antiaircraft artillery.

(8) LA INTERCETTAZIONE TELEFONICA SUL CAMPO. [The interception of telephonic conversation in war.] Lieut. Colonel Ravazzoni

(9) LO SVILUPPO DELLA MOTORIZZAZIONE E DELLA MECCANIZZAZIONE NELL'ESERCITO DEGLI STATI UNITI. [The development of motorization and mechanization in the United States Army.]

ROYAL AIR FORCE QUARTERLY (Great Britain)

October 1934

(1) ARMAMENTS

(2) THE PRINCIPLES OF WAR AND THE R.A.F.: MAINTENANCE OF THE AIM. Wing-Commander Howard-Williams

(3) THE OTHER END OF THE STICK. By an Examiner for the Staff College qualifying examination

(4) THOUGHTS ON MOBILITY. By Eyas

(5) EGYPT, YESTERDAY AND TO-DAY. AN EXPERIMENT OF WORLD-WIDE INTEREST. BRITAIN'S PERPETUAL RESPONSIBILITY. Major Pemberton

(6) PALESTINE REMINISCENCES

(7) UNITED STATES AIR-MAIL AND PASSENGER SYSTEMS. Pilot-Officer Newcombe

ROYAL ARMY SERVICE CORPS QUARTERLY (Great Britain)

May 1934

(1) THE DIRECTION AND OPERATION OF THE S. & T. SERVICES OF A CORPS

(2) THE OPERATION OF AMMUNITION SUPPLY IN A WITHDRAWAL

(3) THE INSPECTION OF MECHANICAL TRANSPORT IN WAR

(4) POST-MOBILIZATION TRAINING DURING A LONG SEA VOYAGE

(5) THE OPERATION OF A RAILHEAD SUPPLY DETACHMENT

(6) CONSIDERATIONS ON THE ALLOTMENT AND EQUIPMENT OF R.A.S.C. COMPANY WORKSHOPS

(7) THE PLACE OF THE SUPPLY PERSONNEL COMPANY IN THE SUPPLY ORGANIZATION FOR WAR

ROYAL ENGINEERS JOURNAL (Great Britain)

September 1934

(1) MILITARY BRIDGING EQUIPMENT. Colonel Sayer

(2) TEMPORARY ROADS DEPARTMENT. V. BUILDING ROADS BY NATIVE LABOUR. By "Roadsurvey"

(3) AIR, SEA AND LAND IN BURMA. Captain Wyatt

(4) THE 15TH FIELD TROOP AT HAIFA, SEPTEMBER 23RD, 1918. Major Fowle

(5) THE NORTHERN FRONTIER OF INDIA. Lieut.-Colonel Bruce

(6) THE CONSTRUCTION OF RAISED MAPS. Lieutenant Eley

SANCT CHRISTOPHORUS (Germany) (Formerly, "Kraftzug")

BY MAJOR F. DURING, INFANTRY

January 1934

(1) DEUTSCHLANDS KAMPF UMS DASEIN. [Germany's fight for existence.]

An article pertaining to mechanization. After describing the development of mechanization in France and Great Britain, the author shows three German combat cars, the frame of which is built of wood and placed on a motor vehicle.

February 1934

(2) STAND DER KAMPFWAGEN-ENTWICKLUNG IN FREMDEN HEEREN. [The development of armored vehicles in foreign armies.]

(3) ABTRANSPORT VON VERWUNDETEN AUS FECHTENDEN KAMPFWAGEN. [Evacuation of wounded from armored vehicles in action.]

The author states that the evacuation of wounded from slow moving tanks, which are accompanied by infantry, can easily be made by ordinary methods after a position is occupied by the infantry; but the evacuation of wounded from armored vehicles, when long distance raids or wide envelopments are made, presents a problem. The early evacuation of a wounded man from a tank is very desirable; not only is it an extremely uncomfortable vehicle for him to travel in,

but he gets in the way of the rest of the crew and is apt to become a menace to the fighting efficiency of the tank and to lower the morale of others; whereas, the possible availability of some medical care in case of need or evacuation, if wounded, would have a stimulating effect on an armored force going into action.

It is suggested that some sort of an armored ambulance be provided, which is capable of going wherever a tank will go. This ambulance could be sent out to pick up casualties from individual tanks. Having picked up the wounded, it could dispose of them in one of the following ways as the situation demanded:

(a) Casualties could be transferred to other vehicles returning to the rear; or

(b) Return casualties to own lines and dump them on the normal route of evacuation.

Collection stations could also be established along the main routes of advance.

If and when armored supply vehicles become necessary, the protection that these would require would be a great help in the evacuation of casualties.

(4) DIE MOTORISIERUNG DER ARTILLERIE IN FREMDEN HEEREN. STAND ENDE 1933. [Motorization of artillery in foreign armies up to the end of 1933.]

March 1934

(5) DAS KRAFTFAHRZEUG IM KAMPF MIT DEM WINTER! [Trucks in winter.]

(6) KETZEREIEN ÜBER GELÄNDEGÄNGIGKEIT. [Questions about the capabilities of motor vehicles to traverse terrain.]

The author concludes that it is much easier to build roads than to build motor vehicles which could traverse over all kinds of terrain.

(7) STAND DER PANZERKRAFTWAGEN-ENTWICKLUNG IN FREMDEN HEEREN. [The development of armored cars in foreign armies.]

April 1934

(8) ABWEHR VON KAMPFWAGEN UND PANZERKRAFTWAGEN. [Defense against combat cars and armored cars.]

According to the author, a defense against motorized armored vehicles should consist of antitank weapons, such as a ball of hand grenades to be thrown under the tracks of the tank. (The grenades must be so thrown that the detonation must occur at a sensitive part of the tank and at the right moment.) Woods, mountains, morasses are very effective in the defense, but they must be augmented by artificial means such as deep ditches and obstacles of various kinds. Ditches should be at least 3 yards wide and 2 yards deep. Holes 5 yards in diameter and several yards deep, properly camouflaged, are very effective. All means of defense must be properly camouflaged, so as to prevent the enemy from recognizing the scheme and location of weapons. A very important factor is the proper determination of the probable direction of attack. A study of the terrain will help in this, as will the placing of sound locaters to determine the concentration of the armored vehicles.

May 1934

(9) STAND DER HEERESMOTORISIERUNG IN FREMDEN HEEREN. [Motorization in foreign armies.]

(10) DIVISIONS-KRAFTWAGEN-KOLONNE 574 MIT ABTEILUNG PICHT DURCH DIE WALACHEI. [Division truck column (No. 574) with battalion Picht through the Walachia.] (I) Lieutenant v.Dobers

The author describes his personal experiences as column commander when the column (as motorized baggage train) had to accompany a reinforced battalion of the 148th Infantry, which had the mission to harass and dislodge the Rumanians on 16 and 17 November, 1916. He mentions the difficulty in obtaining motor fuel when in enemy territory, and how his column had to make a detour of 30 miles on account of the bridge over a river having been blown up.

June 1934

(11) DIE MOTORISIERUNG DER WAFFEN IN FREMDEN HEEREN. [Motorization of weapons in foreign armies.]

(12) NEUZEITLICHE FRANZÖSISCHE ANSCHAUUNGEN ÜBER PANZERFAHRZEUGE. [Latest French views about

armored vehicles.] A description of French tanks.

(13) DIVISIONS-KRAFTWAGEN-KOLONNE 574 MIT ABTEILUNG PICHT DURCH DIE WALACHEI. [Division truck column (No. 574) with battalion Picht through the Walachia.] (II) Lieutenant v.Dobers

SIGNAL CORPS BULLETIN

July-August 1934

(1) SIGNAL COMMUNICATION IN THE 1933 AIR FORCE MANEUVERS. Captain Murphy

(2) A SURVEY OF RADIO-OPTICS. Hershberger

(3) A CIVIL WAR EXPERIENCE IN THE USE OF TELEGRAPHY. Spring

(4) THE EMPLOYMENT OF A MECHANIZED CAVALRY BRIGADE. Major Bonsteel

(5) THE CONTRIBUTION OF THE CRYPTOGRAPHIC BUREAUS IN THE WORLD WAR. (V) Gyldén

September-October 1934

(6) FEAR AS A FACTOR IN LEADERSHIP PROBLEMS. Captain Hershey

(7) THIRD CORPS AREA CIVILIAN CONSERVATION CORPS RADIO SYSTEM. Lieutenant Bixby

(8) TWO-WAY COMPOSITE TRUNKS BETWEEN UNATTENDED PAX AND MANUAL EXCHANGE. Major Bender

(9) TELEGRAPHY WILL NOT DIE. (Translated from French Journal "Télégraphique," Berne, Switzerland, December, 1933)

(10) SIGNAL CORPS WEATHER SERVICE DURING AIR CORPS MANEUVERS ON PACIFIC COAST, APRIL-JUNE 1933. Captain Thiessen

(11) THE CONTRIBUTION OF THE CRYPTOGRAPHIC BUREAUS IN THE WORLD WAR. (VI) Gyldén

WEHR UND WAFFEN (Germany)

BY MAJOR F. DURING, INFANTRY

April 1934

(1) ZUR NEUEN AUSBILDUNGSVORSCHRIFT FÜR DIE ARTILLERIE. [The new training regulations for artillery.] Lieut. Colonel Schlieper

(2) BEDEUTUNG DER BEWEGLICHKEIT FÜR DIE SCHWERE ARTILLERIE. [Significance of mobility for heavy artillery.] By "Z"

(3) GLIEDERUNG UND BEFEHLSVERHÄLTNISSE DER ARTILLERIE IM ANGRIFF. [Organization and command of artillery in the attack.] (I) Major Schneider, Retired

The author brings up the question of centralized or decentralized control. In case an infantry attack goes according to plan, there is no need for decentralized control, but from the moment when the prearranged plan becomes upset, artillery staffs should be with the infantry leaders and should work closely hand in hand with the new plans of the infantry. Only the closest cooperation between infantry and artillery will lead to success.

May 1934

(4) GLIEDERUNG UND BEFEHLSVERHÄLTNISSE DER ARTILLERIE IM ANGRIFF. [Organization and command of artillery in the attack.] (II) Major Schneider, Retired

In this final installment the author brings out that the organization of the mass of artillery is most important. In the war of movement, rapid reconnaissance and going into position gives the best assistance to the infantry.

(5) BETRACHTUNGEN ZUR NEUEN A.B.A. [The new training regulations for artillery.] Lieut. General Marx, Retired

(6) LUFTANGRIFFE AUF DIE FLOTTE BEI DEN ENGLISCHEN HERBSTÜBUNGEN 1933. [Air attacks on the British Navy during the British maneuvers, 1933.]

Eighty army and navy planes attacked 3 battleships, 3 cruisers, 21 destroyers, and 2 airplane carriers during the second day of the maneuvers, making 19 attacks. The advantage was with the air corps on account of conditions incident to maneuvers. Therefore the results obtained should not be taken as a lesson for war.

(7) WEHRTECHNIK. [Technique in war.] Major General Becker

June 1934

(8) PRÜFUNG DER BILDQUALITÄT VON FERNROHREN. [An examination of the quality of field glasses.] v.Hofe

(9) EIN BEFEHLSVERFAHREN FÜR DIE SCHIESZGRUNDLAGENERMITTLUNG UND FEUERLEITUNG IM BEWEGUNGSKRIEGE. [A system for the determination of firing data and fire control in a war of movement.] Major Zuber, Retired

(10) BORDBEWAFFNUNG VON FLUGZEUGEN. [Armament of airplanes.] Captain Ritter, Retired

WISSEN UND WEHR (Germany)

BY MAJOR F. DURING, INFANTRY

April 1934

(1) DIE STRATEGIE IM WANDEL NEUZEITLICHER KRIEGFÜHRUNG. [Strategy under changed conditions in the conduct of war.] General Wachenfeld

The author compares the technique of v.Clausewitz, Moltke, and Schlieffen in this article and states that due to technical and other developments the conduct of war has changed. He defines as art of war the proper use of all means for war; as tactics, the planning for and leadership in a battle, and the proper use and coordination of several battles as strategy. According to v.Clausewitz, tactics is the proper use of troops in battle and strategy the proper use of each battle for the objective of the war.

Tactics presupposes contact with the enemy. Strategy brings out this contact at a decisive point by proper concentration, formation, and grouping of large units. According to Moltke, strategy begins with the original concentration, and if this concentration is faulty it can never be corrected. v.Clausewitz gives four basic principles for strategy:

(1) The use of all available man-power
(2) Concentration of the mass, at a place where the main battle is to be fought
(3) Surprise
(4) Pursuit.

The author concludes that the four principles are sound as proven by the war. Germany violated the first principle by not using all available man-power, and the second, by allowing too strong forces on secondary fronts. The third principle was complied with by Germany. About the fourth principle the author states simply that that principle is sound.

(2) GEISTIGE WEHRBEREITSCHAFT. [Mental national preparedness.] Colonel Billmann

An article pertaining to the present mental training of the German people and especially of the German youth in National Socialism, or perhaps better—Hitlerism.

(3) DIE EINHEIT VON STAATSMANN UND FELDHERR BEI FRIEDRICH DEM GROSZEN IN IHRER ENTWICKLUNG VOM ERSTEN SCHLESISCHEN BIS ZUM SIEBENJÄHRIGEN KRIEGE. [The development of the unity of statesman and field marshal of Frederick the Great between the first Silesian to the Seven Years' War.] Lieutenant v.Xylander

(4) KRIEGFÜHRUNG UND FINANZEN. [War and finances.] Pantlen

Special April 1934 number

(5) KRITISCHE BETRACHTUNGEN ZU DER NEUEN FRANZÖSISCHEN LITERATUR ÜBER DIE MARNESCHLACHT. [A critical review of the new French official history of the battle of the Marne.] Lieut. Colonel Müller-Loebnitz

This article criticizes the military ability of Marshal Joffre as a great military commander.

(6) RENNENKAMPFS FÜHRUNG 1914 IN OSTPREUSZEN UND BEI LODZ. [Rennenkampf's leadership in 1914 in East Prussia and at Lodz.] Frantz

The author analyzes Rennenkampf as a military leader and concludes that he was not even a leader of average ability. He was a loud-mouthed, brutal, and inconsiderate officer, who as Colonel was given the name of "The Tiger." General Ruski requested the removal of General Rennenkampf as army commander, claiming that the latter was not capable of leading his troops during battle or during the advance to battle; that he always brought his troops into the most disadvantageous positions for battle, and marched them unnecessarily, causing thereby many march casualties.

(7) EINE MISZACHTETE KRIEGSLEHRE. [A disregarded lesson of war.] Admiral Gadow, Retired

This article brings out, in short, that "a sea defense without the power of offense is no defense at all," which lesson was learned from the American Civil War (1861-1865), but which was totally disregarded by the German Navy.

May 1934

(8) WEHRGEOGRAPHIE. [Defensive geography.] v.Niedermayer

This article is a discussion of terms. The term "military geography" which has been used heretofore, pertains to the geography of a possible theater of war and had no reference to the area and states of the nation as a whole. Future war, however, will affect the entire nation and its people, and not only armies fighting in the theater of operations; therefore the geography of the entire nation must be considered in its relation to a possible war. For this reason the term "military geography" is not applicable anymore and the term "defensive geography" has been adopted instead.

(9) DIE WEHRPOLITIK DER TÜRKEI. [National defense policy of Turkey.] Engelmann

After a discussion of the political situation of Turkey with Russia, Greece, Italy, France, and England, the author comes to the conclusion that there is no immediate danger of a conflict, but inasmuch as Turkey is practically embedded in a net of foreign interests, moments of danger and clouds of war may arise and Turkey should have and has a formidable defensive force. Every able man in Turkey between the years of 21 and 46 is subject to call. The active tour of service is 1½ years with infantry and cavalry, 2 years with air corps and technical troops, and 3 years with the navy and gendarmerie. Turkey, having a population of about 15 million people, has an army of 20,000 officers and 198,000 enlisted men. The organization of the Turkish Army consists of 3 armies of 3 army corps each. Each corps has 2 infantry divisions of 3 infantry regiments of 3 battalions each, 1 field artillery regiment of from 6 to 9 batteries and the following corps troops: 1 regiment of cavalry, 1 regiment of artillery, 1 battalion of engineers, 1 communication detachment, 1 battalion of trucks.

Army troops consist of 5 divisions of cavalry of 3 regiments each (each regiment has 4 line troops and 1 machine-gun troop, and 1 battalion of horse artillery); 3 independent mountain brigades consisting of 2 mountain infantry regiments with attached mountain artillery; railroad troops; antiaircraft troops equipped with the latest motorized searchlights; a cadre of engineer troops; and 3 tanks. Turkey has no chemical troops.

The air corps has 300 planes. The gendarmerie consists of 3,000 officers and about 40,000 enlisted men, 10,000 of which are organized into 17 border battalions. The Turkish navy consists of 1 heavy cruiser, 4 heavy destroyers, 6 "U-boats," 2 light cruisers, 2 destroyers, and 4 topedo boats (old models), which are used for training purposes.

Prospective officers enter as officer aspirants and after having taken a two-year course at the War School and 6 months at the Basic Weapon School, they receive their diplomas as officers. Special courses and schools are provided for officers, and the time at the General Staff School is of 3 years duration. The Turkish General Staff is very modern.

Turkey is planning an extensive railroad construction in order to facilitate transportation.

The author closes with the statement that Turkey has an army fully capable of defending its homeland, thereby assuring peace in the southeast.

(10) EIN BEITRAG ZUR GESCHICHTE DER SCHLACHT VON JENA. [The battle of Jena.] Major General v.Borries, Retired

(11) GEDANKEN ÜBER EIN NEUES MILITÄRSTRAFRECHT. [Thoughts about a new manual for courts martial.] Rittau

June 1934

(12) GNEISENAU, EIN VORBILD AUCH FÜR DEN OFFIZIER UNSERER ZEIT. [Gneisenau, a model for officers of our times.] Lieut. General v.Cochenhausen, Retired

Gneisenau was very influential in freeing Germany from the yoke of Napoleon. He was able to lead a defeated army to victory. General v.Cochenhausen states that that is not the only reason why Gneisenau should be a model for officers. Gneisenau's concept of life, duty, and honor should always be a goal for officers to strive for.

(13) DIE TECHNISCHEN PROBLEME DER NEUZEITIGEN KRIEGFÜHRUNG. [The technical problems of modern war.] Lieut. Colonel Justrow, Retired

Clausewitz's basic law for war: first, to be strong—everywhere in the beginning—and then at the decisive place, and second, to use all forces simultaneously, while originally written for a war of limited areas, is still applicable, even though we have numerous technical auxiliary means at our disposal.

The modern war makes three distinct demands which can only be satisfied by technical means.

(a) An early reconnaissance and the interruption of the advance of the enemy's armies and the destruction of an industrial center far in rear of the theater of operations.

(b) The utilization of all available means in order to bring our forces rapidly and ready for battle to that place which has been selected as the decisive point by our high command, in order to protect our own industries against attacks from the air.

(c) To raise all of our means for war to such an efficient state that they will exercise an enormous influence on the entire conduct of operations.

The author discusses each demand very much in detail. He asserts that it will be very difficult for airplanes to cross the border on account of the numerous antiaircraft positions. It will be necessary, therefore, to use small observation planes which will have to cross the border at a height of at least 30,000 feet in order to pass the antiaircraft defenses. After passing the border, pilots can come down to a lower height. In the meantime the enemy pursuit planes will take off and meet our planes, and an air battle will ensue.

In order to win, one must have a superior number of planes, but one must not only be superior in numbers but the planes must be the fastest, of greatest maneuverability, and capable of climbing rapidly. These planes should be equipped with the best optical apparatus to observe and take pictures from great heights and should also have equipment to permit the pilot to fly into the stratosphere.

At the same time while this reconnaissance is going on, everything must be set in motion for a rapid concentration of ground troops at a place from which the high command can maneuver advantageously. The enemy must be interrupted in his plan for advance and his lines of communications must be completely disrupted in order that he will be unable to give battle. At the beginning of a war the biggest chance for a decision is in a technical superiority.

A simple solution to a rapid troop movement would be to transport the entire military force by planes. This may sound fantastic, but every nation is trying to reach this ideal.

France has a total of 4,357 planes and at maneuvers has transported battalions in rear of the enemy in order to create a panic.

The advance of troops for the present will depend of course on railroads and motor vehicles. But an uninterrupted advance as in 1914 will be out of the question. Besides interrupting the advance of troops, the air corps has many more missions, such as bombing industrial centers, ammunition and powder factories, places where munition is stored, etc. The modern planes don't have to fly low in order to make hits. In order to protect the people it is necessary to teach them "defense against air attacks." It is the greatest of folly to instill fear in the people.

The author considers the high explosive bomb the most dangerous one, and unless one believes everything that is being said about future fantastic gas attacks, it is more important to prepare for defense against the high explosive bomb. In previous wars everything depended on the marching capabilities of the troops and on the firepower of each individual soldier. The number of casualties was the decisive factor for winning or losing a battle. The man was not subordinate to the machine. How much this has changed can best be shown by a comparison of a 1914 division with that of a modern division.

A 1914 German division consisted of:

4 regiments of infantry and 4 machine-gun companies of 24 machine guns
3 troops of cavalry

12 batteries of 72 pieces of artillery
1 engineer company
2 heavy batteries of 8 pieces of artillery
3 airplanes
1 communication detachment
½ platoon searchlights and trains, etc.

A modern French infantry division consists of:

3 regiments of infantry and 9 machine-gun companies with 144 machine guns, and 3 companies with 18 mortars and 9 infantry cannons
1 reconnaissance detachment consisting of 1 bicycle company and troop of cavalry with 7 heavy and 8 light machine guns
9 batteries of 36 75-mm. guns
6 heavy batteries of 24 G.P.F's
1 engineer battalion
1 signal company
1 radio detachment
4 labor companies
1 battalion of tanks having 63 fighting tanks and 3 radio tanks
1 balloon company and trains, etc.

A modern French air division consists of:

4 air regiments having 270 pursuit and 200 observation planes
2 airship battalions
1 brigade bombers having 100 day bombing and 60 night bombing planes.

In discussing artillery problems, the author asks the question: What is the relation of artillery to infantry? Formerly the infantry was the queen of battle; therefore cavalry, artillery, and engineers received infantry training. This has been changed. Today the artillery is on a footing with the infantry and so infantry, cavalry, and engineers must receive some artillery training.

The infantry of old had only such weapons which could be carried on the man and his mobility was not impaired. Today the infantry in battle meets tanks, trenches, machine-gun nests, etc., which it has to combat. Its artillery is far in rear and to wait for artillery fire may delay the advance too long; therefore the infantry has artillery weapons with it to take care of the tanks, etc., themselves. So we find as armament of the infantry, mortars, 37-mm. guns, accompanying weapons, antitank weapons, etc.

The author then discusses the different caliber artillery guns.

Clausewitz said that the knowledge of too much detail is disadvantageous to a high command. Only big things create an impression, and small details are not considered at all; in fact, they are usually disregarded. Therefore the high command must know what to disregard and what to use of the small technical details.

(14) BELGISCHE UND SCHWEIZERISCHE NEUTRALITÄT IM WELTKRIEGE. [Belgian and Swiss neutralization in the World War.] Colonel Schwertfeger, Retired

(15) DER FRANZÖSISCHE GAS-SANITÄTSDIENST. [The French gas medical service.] Colonel Adams, Retired

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Section 5

ACADEMIC NOTES, C. & G.S.S.

REPRINT OF CURRENT SCHOOL MEMORANDA, WHICH AFFECT INSTRUCTIONAL PROCEDURE OR TACTICAL DOCTRINES.

CONTENTS

	Page
Military Intelligence. Combat Intelligence Regulations (Tentative)	141
Attack	161
Commander's Procedure in Dealing with his Staff	162

MILITARY INTELLIGENCE*

COMBAT INTELLIGENCE REGULATIONS (TENTATIVE)
[1934]

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SECTION III

Relation of the Commander to Combat Intelligence Work

	Paragraph
Importance of combat intelligence	4
Responsibility of the commander	5

4. IMPORTANCE OF COMBAT INTELLIGENCE.—*a.* Regardless of what may be the situation confronting the commander, an intelligent decision requires consideration of four principal factors, namely:

(1) The mission.

(2) The means available for the execution of the mission.

(3) The enemy who must be overcome in order to accomplish the mission.

(4) The terrain over which the operation must be executed.

b. The soundness of the commander's decisions will depend largely on the accuracy of his knowledge as to the real value of these factors, and on his ability to determine correctly the relative importance of these factors as they

*The above is an abstract of the Combat Intelligence Regulations (Tentative) which have recently been published by this school.

exist in a given situation. The *enemy* is the factor which determines the real significance of the other three factors. If there were no enemy to overcome there would be no problem in the accomplishment of any *mission*. If the enemy is relatively so weak that he is incapable of offering effective opposition, there is no reason to be concerned about the *means available*. *Terrain* is significant only as it bears on an actual or potential tactical or strategical situation, which situation is the direct result of what the enemy has done or may do. Therefore combat intelligence concerning the terrain is of vital importance, since through it the commander obtains essential information concerning the critical factor, namely, the *enemy* who must be overcome to accomplish the mission.

c. The difficulties involved in obtaining adequate information, and in arriving at reliable conclusions, are many. These difficulties are due principally to the fact that the interests of the enemy demand that he shall make every possible effort to foil our attempts to gain information. He will conceal his movements by night marches and by counter-reconnaissance measures involving the use of both ground and aerial agencies; he will make use of camouflage; he will resort to any measures that offer a reasonable hope of attaining secrecy or surprise; he will try to do the thing his opponent least expects; and he will often resort to deception. The opposition of the enemy's interests to our own, as well as the independence of his will, must necessarily make the enemy more or less an unknown factor in every situation. It is the object of combat intelligence work to reduce as far as possible the uncertainties regarding the enemy.

5. RESPONSIBILITY OF THE COMMANDER.—Since combat intelligence constitutes a vital element in the commander's estimate of the situation leading to any tactical or strategical decision, it is a basic function of command, and the personal duty of the commander, to initiate the search for information of the enemy necessary for such decisions. In addition, commanders will receive reconnaissance missions from higher authority. These may, or may not, coincide with their own requirements for information. In the theatre of operations each commander is, therefore, charged

with the continuous execution of the necessary measures for the collection of military information within his own zone of operations. The zone, in width and depth, in which a commander is responsible for the search for information, may be designated by higher authority, or may be the subject of decision by the commander. The most important consideration in either case is to cover a zone of sufficient width and depth, by the employment of all available means and through liaison with higher and adjacent units, to prevent tactical surprise. In determining this zone the commander gives due consideration to the mobility of enemy mechanized and motorized units as it affects directly the distance to which it is necessary to conduct the search for information.

SECTION IV

Essential Elements of Enemy Information

	Paragraph
Definitions	6
Purpose of designation by the commander	7
Publication of essential elements of enemy information	8

6. DEFINITIONS.—*a. Enemy capabilities.*—In every tactical or strategical situation there are certain lines of action open to the enemy. These lines of action are called the *enemy capabilities* for that particular situation. It is important in the highest degree to the commander that he learn, as soon as possible, along which of these lines the enemy is acting or is preparing to act. It must be understood that these enemy capabilities include not only the various types of enemy lines of action which will affect our own plans (such as defense, withdrawal, attack, etc.), *but also the enemy capabilities within each of these types of action.*

b. Essential elements of enemy information.—In any situation the essential elements of enemy information are inquiries to G-2 as to which of his capabilities the enemy will put into execution. The information which furnishes the answer to these inquiries, if obtained, will then serve as a basis either for the formulation of plans for the execution of a decision already made, or for a new decision. It

is the personal responsibity of the commander, in the discharge of his command function with respect to intelligence, to designate for each phase of operations the essential elements of enemy information.

7. PURPOSE OF DESIGNATION BY THE COMMANDER.—Essential elements of enemy information are designated for the purpose of focusing the attention and activities of all intelligence agencies on that information which, from the point of view of the commander, is most important at the particular time. The designation of essential elements does not, however, limit the activities of agencies to the collection of information bearing on them alone. It is the duty of every agency to collect and transmit all classes of enemy information. This must not interfere with the principal mission of securing information required to furnish the replies to questions included in the essential elements.

8. PUBLICATION OF ESSENTIAL ELEMENTS OF ENEMY INFORMATION.—The essential elements of enemy information required, are announced by the commander as soon as he has made his tactical decision for an operation. They are recorded in paragraph 2 of the Intelligence (G-2) Annex whenever this annex is issued (see page 117, *Staff Officers' Field Manual,* Part One). Essential elements are also recorded in paragraph 2 of all field orders, or in that part of oral, dictated, or fragmentary orders which corresponds to paragraph 2 of a written order. They serve, therefore, as a general directive for all intelligence activities and as a basis for detailed reconnaissance instructions to be embodied in other parts of the annex or orders. All agencies are thereby enabled to recognize the value of information of any character which they may obtain.

SECTION V

The Intelligence Section of the Staff

Paragraph
Duties and functions of the intelligence section of the staff ------- 9
Organization ---------- 10

9. DUTIES AND FUNCTIONS OF THE INTELLIGENCE SECTION OF THE STAFF.—*a.* The collection, evaluation, and

interpretation of military information is the duty of the Intelligence (G-2) Section of the general staff of large units and of the corresponding staff section of the brigade, regiment, and battalion. It organizes and prepares the directive for the activities of the various reconnaissance agencies so as to be able to answer the commander's requirements, as expressed in the essential elements, in time to enable him to make use of the information.

b. While it is always the primary concern of the intelligence section to obtain timely answers to the essential elements designated by the commander, it is concerned as well with all classes of enemy information which may have a present or future bearing on the operations of the command or of higher, lower, or adjacent units. It is a basic principle of intelligence work that all information must be transmitted promptly by collecting agencies, and that the various intelligence staffs work in such close liaison with each other as to insure that intelligence, secured by any agency, shall promptly arrive at the intelligence staff section which can make use of it.

c. The functions of the intelligence section of the staff, other than those bearing directly on combat intelligence, are of secondary importance. The nature of these secondary functions is included in paragraph 17, *Staff Officers' Field Manual,* Part One.

10. ORGANIZATION.—*a.* All combat units, down to include the battalion, are provided with intelligence (G-2) staff sections. In organizations lower than the division one officer of the unit staff, designated as the Intelligence Officer, is charged with the duties connected with combat intelligence. He is provided with such enlisted assistants as are necessary for the conduct of office work. In the division and higher units the intelligence section of the staff is headed by a general staff officer, who has the title of Assistant Chief of Staff, G-2. In the division and higher units, the Assistant Chief of Staff, G-2, is provided with one or more officers as assistants, and such warrant officer and enlisted personnel as are required to perform clerical and technical work connected with the section office.

b. In addition to the office forces provided for the various headquarters to assist in the functioning of the intelligence staff section, there is in each unit a field force of intelligence personnel who operate as collecting agencies in the operation of observation posts, as intelligence scouts, interpreters, etc. In the units lower than the division the field and office personnel are so trained as to be interchangeable so far as possible. The field force operates directly under the orders of the intelligence officer.

SECTION VI

Collection of Information

	Paragraph
Collecting agencies	11
Formulation of the intelligence plan	12
The intelligence annex	13

11. COLLECTING AGENCIES.—*a.* The collecting agencies available to a combat unit vary with its size, facilities, and distance from the front. At one extreme is the battalion, the smallest unit provided with intelligence personnel, which collects its information mainly by means of observation posts, patrols, and scouts; from the reports of front-line companies; from the hasty examination of prisoners of war, enemy deserters, inhabitants, and enemy documents. At the other extreme is the army or group of armies, which has at its disposal such facilities as aerial photography, radio intercept, radio goniometry, secret service, and sound-and-flash ranging. Organic agencies of collection are fixed for the various combat units by *Tables of Organization.* Other agencies may be attached to units to conform to the needs of various circumstances under which they are operating for the time being.

b. Collecting agencies available to the intelligence section may include part or all of the following:

(1) Military intelligence personnel of the unit. This personnel is assigned to all units provided with intelligence staffs, for the sole duty of conducting intelligence activities for the unit. They are directly under the orders of the in-

telligence officer. The intelligence section (G-2) of the staff thus differs from any other staff section in that it has an operative function in directing the activities of this specialized body of troops, and is directly responsible for its training. The activities of the intelligence personnel through which information is procured include:

(a) The installation and operation of observation posts so as to maintain continuous observation of the enemy within the zone of action of the unit, from the moment of gaining contact.

(b) The action of intelligence scouts, either operating alone, or accompanying reconnaissance patrols, or raiding parties of combat troops. Their mission is to gather information which their training specially fits them to procure. The intelligence personnel on such duty confine their activities to the acquisition of information. They engage in combat only in furtherance of this end.

(c) The gleaning of information from examination of prisoners of war. The specially trained interpreters of the intelligence service conduct the investigation of prisoners.

(d) Examination of captured enemy documents. The study of captured documents is a function of the intelligence personnel; at times, assisted by signal corps specialists in cryptography.

(e) Interrogation of inhabitants, deserters, and repatriates.

(f) The investigation of captured matériel.

(g) Study of the hostile and neutral press.

(h) Study of military regulations, and texts, of the enemy.

(i) Secret service activities.

(2) Troops, under the command of the headquarters which may be given intelligence missions to gain certain specified information. In addition to carrying out such special intelligence missions, it is the duty of every subordinate unit to report all information gained bearing on the enemy. Intelligence missions are, in principle, assigned to subordinate units by the commander. They are usually drawn up however by G-2. Of principal importance to the intelligence section in the search for information are the following:

(a) Subordinate units of the same arm. For example, a corps may give an intelligence mission to a division to perform, either as an operation strictly for gaining information, or in conjunction with some other tactical operation.

(b) In the case of infantry units; attached cavalry. The cavalry may be given a purely intelligence mission, or one to be carried out in conjunction with some other tactical mission.

(c) Aviation, either attached or organic. Observation aviation will secure information through aerial observation and photographic operations. The interpretation of photographs is carried out by specially trained intelligence personnel of the intelligence section. Balloon observation is used to extend the observation of terrestrial observation posts.

(d) In order properly to utilize the above agencies in the search for information, it is essential that the intelligence officer be thoroughly conversant with the powers and limitations of each. This requires not only a knowledge of their technical characteristics but that he, at all times, be informed as to their condition and capability for further effort.

(3) Special information services of component units of the command. These services are, in general, technical in nature, operated primarily in the interest of the auxiliary arms which they serve, and not under the supervision of the intelligence section. A close liaison is, however, maintained between the intelligence section and these services in their mutual interest. The principle of cooperation insures their harmonious action as well as the rapid and continuous exchange of information. These special services are:

(a) Artillery Information Service, which may have available to it in addition to normal intelligence agencies, sound and flash ranging sections.

(b) Air Intelligence Service.

(c) Antiaircraft Intelligence Service.

(d) Special Signal Corps installations: telegraph and telephone listening stations, and radio goniometry.

(4) Higher and adjacent units.

12. FORMULATION OF THE INTELLIGENCE PLAN.—*a. Analysis of the essential elements of enemy information.*— (1) The commander having designated the essential elements of enemy information, it becomes the duty of the intelligence officer to secure the required information within such time as to be of use. As the first step in the accomplishment of his task, he must analyze the essential elements as announced to him by the commander in order to determine what specific information he must obtain through his various agencies for the purpose of answering the inquiries included in the essential elements. Certain essential elements will be of such a character that they will require very little analysis by G-2 in order to transform them into suitable reconnaissance missions. For example, a unit may be defending the exit of a mountain pass. An enemy force may have been located on the far side of the mountain near the entrance to the pass. A very proper essential element of enemy information might be: "Will the enemy force, now located at____, move against us?" Assuming that there is only one road available to the enemy, G-2, in assigning this mission, would direct the air service to reconnoiter this road at stated intervals, reporting any enemy movement through the pass.

(2) Other essential elements will be of such a nature that they will have to be subjected to a careful analysis by G-2 in order to determine what indications must be sought to enable him to answer the inquiries propounded in the essential elements. For example, "Area, time, direction, and weight of hostile attack" may be essential elements in a defensive situation. To obtain the information which will furnish the answer to these questions, is possibly beyond the capabilities of any one agency. G-2 therefore must analyze these essential elements to determine what indications might assist in answering them. Such indications might be: the location of new hospitals on the front, the location of fresh infantry units, or the amount and grouping of enemy artillery. The object of the analysis is thus to break down the essential elements into such items of enemy action, or in-

action, as will furnish indications of definite reconnaissance missions.

b. Assignment of missions to collecting agencies.—(1) Having analyzed the inquiries contained in the essential elements of enemy information, the intelligence officer determines certain specific information which, if obtained, will enable him to furnish the answer to them. These items are of such a nature that they can be given directly to various collecting agencies. The collecting agency should be given a specific and definite mission to be carried out according to its tactical and technical training and characteristics. Thus, bearing in mind the characteristics and capabilities of the various agencies available to him, the intelligence officer assigns appropriate specific missions to each.

(2) In connection with each specific mission given to an agency, it is necessary to specify a time and place for reporting on such mission. In order to do this the intelligence officer must be completely informed as to the plans of the commander and as to the proposed action of the command. This is assured through the principle of staff cooperation. The intelligence section, under the supervision of the chief of staff, is constantly in close cooperation with the operations and training section.

(3) From his knowledge of projected operations the intelligence officer is able to determine at what particular time the reports, which are intended to furnish the essential information, must be obtained in order to be of use to the commander. To determine the time at which reports are required, G-2 must analyze the operation in its chronological phases, and arrange for information to arrive as needed. In order not to overburden the collecting agency, the hours by which information is to be reported should be echeloned to conform to the phases of the operation; furthermore, information requested for delivery too long before it is actually needed, may have become inaccurate due to changes in the enemy situation.

(4) Close cooperation with the G-3 section of the staff is necessary in order to insure that the intelligence missions prepared by G-2 are coordinated with the operative missions

given to the same subordinate units in the field orders, and to insure against duplication or conflicting assignment of tasks. The subordinate unit commander should never be left to determine the relative importance of tasks assigned him.

c. The Intelligence Plan.—In order to insure that definite and precise instructions may be given to the available reconnaissance agencies, G-2 must follow a logical mental process in translating the essential elements into these missions. This mental process can best be recorded by the use of the chart shown below:

INTELLIGENCE (G-2) PLAN

Phases or periods of the operation	*Essential elements*	*Analysis of essential elements*	*Reconnaissance agency, or other source*	*Specific orders or requests*	*Hour, and destination, of information. Remarks.*

This chart serves G-2 as a work sheet for preparing reconnaissance instructions. The reconnaissance missions are then grouped under each agency and published, either in the appropriate subparagraph of paragraph 3 of the Field Order, or in the Intelligence Annex when the latter is issued.

13. THE INTELLIGENCE ANNEX.—*a.* The Intelligence (G-2) Annex is the published form of the intelligence plan. It is issued by the division and larger units to amplify the field orders when reconnaissance missions are so numerous as to lengthen unduly the field order. The purpose of an

intelligence annex is to serve as a guide for the intelligence activities of the command. In the annex, the instructions for each collecting agency, as worked out in the plan, are collected together in one paragraph devoted to that agency. For the form for an Intelligence Annex, see page 117, *Staff Officers' Field Manual,* Part One.

b. At the beginning of a campaign a complete Annex should be issued. Succeeding Annexes, omitting paragraphs in which there is no change, are issued to accompany field orders as needed.

c. When the issue of a formal Annex is impracticable, reconnaissance instructions may be included in paragraph 3 of the field order, or issued as fragmentary messages direct to the agency concerned.

SECTION VII

Utilization of Enemy Information

	Paragraph
Classification and recording of information	14
Study of information	15
The answer to essential elements of enemy information	16

14. CLASSIFICATION AND RECORDING OF INFORMATION. —*a.* As a result of the operations of the various collecting agencies, a large variety of items of enemy information will be received by the intelligence section. These originate not only as a result of the specific reconnaissance missions assigned, but also in accordance with the general principle that all information of the enemy of whatever nature shall be reported. A preliminary examination, therefore, should be made of all information received to determine whether the item has intelligence value. This examination is made in order that the time and energies of the intelligence section will not be wasted, that the various documents of the section may not be uselessly cluttered up, and that the communications system be not overburdened by sending other units information of no value to them. It should also determine whether the information requires immediate action.

b. In order to classify information the following are considered:

(1) Is it information of the enemy?

(2) Is it information that is wanted now?

(3) Is it information that may have future value?

(4) Has it lost its value due to subsequent events?

(5) Is it of value to this unit?

(6) Is it of value to subordinate, higher, or adjacent units?

c. On arrival at the section, every message, report or similar communication containing information is pasted in the journal. (For the form for a journal, see page 126, *Staff Officers' Field Manual,* Part One.) If received in oral form, the essential information is typed in duplicate. Long reports may be abstracted. The journal is the day book of the intelligence section of each unit. Important messages, if but a single copy is received, are retyped in multiple copy. The journal is kept as a permanent record. It should be looked upon as the main and primary record of the operations of the section. For this reason entries are made in the journal immediately upon the receipt of the report of the event. The journal is closed daily, or at the end of a phase or period; the time of closing being determined and announced by higher authority. The journal is the file of original messages, orders, reports, special reports, studies, and maps, which are pertinent to the operations of the section.

d. The large quantity of items arriving in the section on all phases of enemy information, requires that they be segregated according to their subject matter. No specified method is prescribed for this purpose. However, experience shows that a practical method is to enter the items on a so-called "work sheet." This is usually composed of a loose-leaf binder with separate pages corresponding to the following headings used in the form for the periodic Intelligence Report:

(1) ENEMY'S FRONT LINE (or nearest elements).

(2) ENEMY'S STRENGTH, DISPOSITIONS, AND MOVEMENTS:

(a) *Units in contact.*—Unit: location of flanks, estimated combat efficiency (strength, training, physical condition, morale, and other pertinent factors).

(b) *Reserves.*—Unit: kind of reserves; location; estimated combat efficiency (strength, etc.); time necessary to engage.
(c) *Changes in before-mentioned units.*—Unit: nature of change, time.
(d) *Movements.*—Kind, amount, direction.

(3) ENEMY'S SUPPLY AND EQUIPMENT (including supply system and location of establishments).

(4) ENEMY'S OPERATIONS. (Combat activities of his troops.)
(a) Mechanized units.
(b) Cavalry.
(c) Infantry and auxiliary weapons.
(d) Artillery.
(e) Tanks.
(f) Airplanes.
(g) Balloons.
(h) Chemical warfare.
(i) Miscellaneous.

(5) MISCELLANEOUS.
(a) Casualties.
(b) Enemy's defensive organization (trenches, emplacements, etc.).
(c) Terrain as it affects the enemy.
(d) Any other information not specifically covered by above headings.

The work sheet is not a permanent record. It is merely a means by which information is studied. Items may be scratched out, when shown to be obsolete or false, or any other means may be used to facilitate the work. Tentative conclusions may be noted from time to time.

c. The intelligence (G-2) situation map.—(1) The intelligence (G-2) situation map is a map, kept in the intelligence section of each combat unit, upon which all available information of the enemy is graphically recorded. It is an effective means of presenting the information in a form which permits ready reference and convenient study. As it is impracticable to record all information in this manner, the situation map can not take the place of the work sheet but, as a complement to the work sheet, it is of much value.

(2) The map used for a situation map should be the best available. Its scale will depend upon the size of the unit; the smaller the unit the larger the scale of the map. However, all headquarters should have copies available of all maps used by all units down to the smallest, so that there will be no danger of having reports and messages referring to places not shown on the map in use at the headquarters.

(3) The terrain covered should include that in possession of our own troops as well as that held by the enemy. On it is placed (using conventional signs or symbols, so far as practicable) such information of the enemy as is of interest to the headquarters concerned.

(4) The map is subjected to a continual process of revision and is kept constantly up to date, new sheets being used when necessary. A tracing, or a copy of this map, showing the situation as known at the close of the period, is used as a situation map to accompany the intelligence report.

15. STUDY OF INFORMATION.—*a. Purpose of study.*—As information is received it is subjected to a study, making a critical and systematic analysis, for the purpose of determining its probable accuracy, significance, and importance. From this study of each separate item of information received, and from the comparison and study of all related items at hand, the intelligence officer may be able to arrive at a more or less definite conclusion as to the enemy situation at a given time. These conclusions are the result of a process in general analagous to the examination of evidence in legal procedure, as outlined in the following paragraphs.

b. Evaluation.—Evaluation is the determination of the probable value of information. The following items are considered.

(1) *Credibility of source.*—Consideration must be given to the source or agency reporting the information in order that its credibility may be determined. The following are some of the more important points to receive attention.

(a) Who reported the information?

(b) Judging from previous experience, is the source accurate and reliable?

(c) Under the conditions existing at the time (distance, means employed, visibility, etc.) could the information have been obtained?

(2) *Accuracy of information.*—Consideration must be given to the information itself in order that the accuracy may be determined. The following are points of importance to receive attention:

(a) Is it confirmed, or corroborated, from other sources?

(b) How does it agree with information on hand covering the same point?

(c) If it is at variance with information on hand, which is more likely to be correct?

(d) How does it agree with information on hand known to be correct?

(e) Does it tend to confirm the estimate as to the enemy's situation, or does it indicate that the estimate is incorrect?

c. Interpretation of information.—The accuracy of information having been determined, the next step is to interpret the information at hand. The following are some of the important questions that should be asked.

(1) What does it mean?

(2) What significance can be attached to it?

(3) Does it alter the significance of previous information received?

(4) Does it add significance to other information received?

(5) Does it clear up any doubtful information previously received?

d. Conclusions.—Information having been interpreted, it is necessary that the intelligence officer draw the correct conclusions therefrom. He takes full responsibility for the conclusions that he draws from his study. It is important to note that, at this stage of the reasoning of the intelligence officer, the conclusions that he reaches concern only the facts of the enemy situation. The whole process, up to this point, deals entirely with the establishing of a basis of morally certain information concerning the enemy situation at the latest possible time on which to arrive at further conclusions as to the enemy capabilities, and as to such probable future action as may be disclosed by them.

16. THE ANSWER TO THE ESSENTIAL ELEMENTS OF ENEMY INFORMATION.—*a. Hypotheses as to enemy capabilities.*—At the time of designating the essential elements of enemy information, for the execution of a maneuver decided upon or any phase of action extending into the future, the

commander and his intelligence officer will have formed certain hypotheses as to possible enemy action, and may have formed an opinion as to the relative value of these hypotheses. These hypotheses are based on the information as to the enemy situation established as being facts up to that time. These hypotheses fulfil two conditions: (1) Every possible maneuver of the enemy, which is capable of having a reaction on the plan of the commander, will be surely included; and (2) all maneuvers, grouped in the same hypothesis, which will have reactions of the same type on the plan of the commander. The first condition limits consideration of possible enemy actions to those which will have an effect on the commander's plan, thereby enabling many possible plans to be discarded, thus simplifying the list of those which have to be considered. The second condition, which groups all those having the same ultimate effect on the commander's plans, will result in a minimum number of hypotheses which must be compared with the commander's own plan. Throughout any phase of a maneuver, these hypotheses as to possible enemy action must constantly be considered in conjunction with the commander's own plan, in order that he may be prepared for appropriate action in the event that the enemy follows any one of them.

b. Establishing the enemy's capabilities.—The task of the intelligence officer in answering the inquiries contained in the essential elements of enemy information designated for a certain phase of action, will require him to limit to a minimum the number of hypotheses as to possible enemy actions. Having established all the facts possible concerning the enemy situation which bear on the hypotheses being considered, the intelligence officer is ready to reason from this basis to determine which of these hypothetical lines of action, in the light of the ascertained facts, are still capable of execution by the enemy. The ideal answer to the inquiries contained in the commander's essential elements of enemy information would be to narrow down, to a single one, the number of hypotheses still possible for the enemy to follow. In most cases this ideal is impossible of attainment. The intelligence officer must constantly be on guard against forming an unwarranted conclusion that the enemy will

follow a certain line of action. This might cause the commander to make a decision visualizing but one course of enemy action, to the exclusion of consideration of other alternatives which the enemy may choose. Thus, the conclusion of the G-2 estimate attempts to narrow down or limit the original enemy capabilities to the enemy's present capabilities.

SECTION VIII

Dissemination of Intelligence

	Paragraph
Necessity for dissemination	17
Classification for dissemination	18
Methods of dissemination	19

17. NECESSITY FOR DISSEMINATION.—It has been stated previously that a basic principle on which intelligence work is founded is that it is the duty of every individual and headquarters to transmit promptly all items of enemy information to the higher, lower, and adjacent units which can utilize it. Military intelligence is of no use until it reaches the individuals or units concerned in time to serve their purposes; hence, as soon as evaluation has been completed, it must be properly and quickly disseminated.

18. CLASSIFICATION FOR DISSEMINATION.—*a*. The first concern of the intelligence section is to furnish the commander with the answers to the inquiries contained in the essential elements of enemy information in time for him to make use of them in planning or executing future action. In his G-2 plan the intelligence officer determines the time when the information must be received. His transmission of the answers conforms to this time.

b. It has been pointed out previously that, while concentrating the efforts of collecting agencies on information bearing on the essential elements, a mass of other information will be received. In the evaluation of all information received, the intelligence section determines its value and significance, and draws conclusions as to the facts of the enemy situation. The primary function of informing the commander having been assured, it is the duty of the intelli-

gence section to carry out the general principle of disseminating this intelligence to all other units or staff sections which can make use of it. To eliminate useless burdening of communication facilities, a preliminary classification is made of that information which should be disseminated, and that which obviously is of no present interest to other units and should be kept on file for future use. That which is determined to be worth disseminating is then further divided into two classes: first, that which should be placed in the hands of other staff sections higher, lower, and adjacent units without delay; and, second, that which can wait to be included in periodic reports. It is impossible to state what types of information belong in the first category and what types in the second. The best guide is the intelligence officer's knowledge of the situation in other units, and their requirements, gained through the close liaison which must exist between intelligence sections. It may be stated as a principle, however, that in all doubtful cases immediate dissemination is much safer. There is no objection to including, in a periodic report, intelligence of the first class which has been given already to the persons most concerned.

19. METHODS OF DISSEMINATION.—*a. Intelligence estimate of the situation.*—The report of the intelligence officer to the commander, on the essential elements of enemy information, will take the form of an intelligence estimate of the situation. The estimate will usually cover the following headings:

(1) *Forward area.*
  (a) Enemy activity.
  (b) Identifications.
(2) *Rear area.*
  (a) Movements.
  (b) Troop concentrations.
(3) *Conclusions.*—(a) Enumeration of plans open to the enemy that may affect the accomplishment of the commander's mission.
  (b) A statement as to which of the plans open to the enemy is more probable of adoption than the others. This statement is to be made only when it can be justified.

b. Intelligence (G-2) Report.—(1) The intelligence (G-2) report is an intelligence document that sums up intelligence which has been collected and evaluated during a given period. It is issued by all intelligence sections of combat units, from the army to the battalion, and is usually

supplemented by a situation map or overlay. The period of time to be covered by the report is prescribed by higher headquarters, or by the commander of the unit. It is a convenient means for keeping subordinate and adjacent units informed of the enemy's situation as determined by the unit preparing the report.

(2) The subordinate units should be able to obtain from the G-2 report, and the situation map, a complete picture of the facts concerning the enemy's situation so far as they have been determined at the time of the report. In the smaller units, such as the battalion and regiment, the report will go into considerable detail and consider the very smallest hostile unit. Going up the scale of command, the reports become a little less detailed and treat the information from a broader viewpoint. Each commander is most interested in hostile units of the same size as his own, and their major subordinate units. In formulating the periodic intelligence reports the intelligence officer governs himself accordingly. The division G-2 report, however, should also include all items of information which would be of interest to front line battalions.

(3) G-2 reports and situation maps are intended primarily for use during contact with the enemy. They also serve a purpose for units not engaged, for they permit all commanders to keep in touch with the general situation of the enemy, and with the local situation at points where the unit is likely to be engaged.

(4) For the form of the intelligence report, see page 128, *Staff Officers' Field Manual,* Part One.

c. Intelligence summaries.—Information is transmitted to higher echelons in the form of brief summaries of the situation. Obviously the corps commander is not interested in the mass of detail which would normally be found in a division G-2 report. Consequently in the preparation of a summary, G-2 includes only such information as would be of interest to the higher commander. The summary will usually take the form suggested above for the intelligence estimate of the situation.

d. Special messages.—Under conditions where immediate transmission of items of information is necessary, and

the individual or headquarters concerned cannot be informed in person by the intelligence officer or a member of his section, messages transmitted by wire, special messenger, or other rapid means of communication, are employed.

e. Conferences.—It is essential for the harmonious exchange of information between various intelligence sections of higher, lower, and adjacent units, that personal conferences between the members of the sections whose work is interrelated be frequently held. This applies especially to the intelligence sections of units in their relation with the special intelligence services (artillery, antiaircraft artillery, and air intelligence sections). In no other way can a community of thought and adjustment of viewpoints be realized. This principle of personal contact, in many cases, can be further carried out to advantage by use of liaison officers at intelligence sections of units from which it is particularly necessary to obtain information.

Attack

[Memorandum of 22 August, 1934]

14. TACTICAL FORMS OF ATTACK.—*c. The envelopment.* * * *

(5) As a convenience in discussion and instruction, envelopments are referred to as *wide* or *close-in.* Although the use of these terms implies a distinction between them based on the distance between the holding and enveloping forces, or on the angle between their respective directions of attack, it must be understood clearly that neither distance nor angle is the determining factor. The adjectives *wide* and *close-in* are indicative only and not definite.

Close control, coordination and supervision of both the holding and enveloping attacks by the commander of the whole force, detailed orders, designation of a boundary between attacking forces, and the use of supporting artillery are characteristic of the close-in envelopment.

In wide envelopments the use of mission orders, with increased freedom of action to subordinate commanders and less centralized control and coordination, omission of a

boundary between forces, and attachment of artillery and other supporting weapons to the enveloping force, are usual.

The Commander's Procedure in Dealing with his Staff

[Memorandum of 3 October, 1934]

1. The *relationship* between a commander and his staff, and the commander's procedure in dealing with his staff, are important subjects and should be emphasized in instruction. It is admitted that this relationship depends entirely on the personality of the commander and on his own individual ideas of command, supervision, and coordination. It follows, then, that the relationship of one commander, with his staff will never be duplicated exactly by another commander. However, the best and least costly way to learn is by the study of the procedure of the great leaders of history and by adopting, as far as we can, such of their methods as seem to suit our own personalities. For example, the relationship that existed between Napoleon and his staff appears to be an excellent subject for study. Napoleon's procedure was logical and direct. It made full use of the staff as advisers to the commander. It kept the commander's mind free of details and placed them with the staff. Napoleon gave the impetus to his staff by making the basic and major decisions. He personally outlined tentatively, by a rough sketch or sketches, what he wished to do or how he desired to employ his troops in a specific strategic or tactical situation. He then turned the sketches over to his chief of staff to have them checked and tested by the staff before giving his final approval to them. The conception of the operation was his own province; the details he left to his staff. His chief of staff, with the information thus obtained, was able to develop Napoleon's ideas, make such supplemental decisions as were necessary to outline the plan more completely, and then have the staff complete the picture by filling in the details. The commander, the chief of staff, and the staff, each had well-defined responsibilities and each fulfilled a proper and well-defined mission.

2. It is believed that Napoleon's method of procedure is sound and practicable today. It is approved as a guide for instructional purposes at this school.

* * * * * * *

4. The procedure suggested above is particularly applicable to large forces where time is available to determine whether or not the preliminary decisions of the commander are practicable of execution.

Section 6

BOOK REVIEWS

CONTENTS

	Page
Banse: **Germany, prepare for war!**	165
Engelbrecht: **Merchants of death**	166
Hulbert: **Overland to the Pacific**	167
Infantry School: **Infantry in battle**	168
Jochim: **Die Operationen und ruckwartigen Verbindungen der deutschen 1. Armee in der Marneschlacht 1914**	169
Justrow: **Feldherr und Kriegstechnik**	169
Kabisch: **Der schwarze Tag. Die Nebelschlacht vor Amiens (8./9. August 1918)**	170
Kearsey: **Notes on the Campaign in France, 1914**	171
Königsdorfer: **Beispiele von Sperren**	171
Liddell Hart: **'T.E. Lawrence'—In Arabia and After**	172
Lippmann: **The United States in world affairs, 1933**	173
Ludendorff: **Mein militarischer Werdegang**	173
Puleston: **High command in the World War**	174
Rogerson: **Twelve days**	175
Seldes: **Iron, blood and profits**	166
Tannenbaum: **Peace by revolution**	175
Ziese-Beringer: **The lone leader. The truth about Verdun**	177

Banse, Professor Ewald.—**Germany, prepare for war!** Translated from the German, "Raum und Volk in Weltkriege." London, 1934—427 pages ..... M 003-A

CONTENTS: Publishers' preface; Author's preface. War and the World War; The Central Powers; The Allies; The Neutrals; The new states; The lesson of the World War.

Reviewed by Major F. During, Infantry

Germany, prepare for war is an exposition of militant Teutonism. The book under review is a translation of the German book, *Raum und Volk in Weltkriege,* which was banned in Germany. The German title may be translated "Space and population in the World War"; Mr. Banse's thesis is that those responsible for the conduct of wars in the past have studied inadequately the terrain and population concerned.

The author develops first his ideas of military geography and the study of the psychology of nations; then he applies his theories to the World War and deals in some detail with each of the Central Powers and European "succession states" and some neutral states, and concludes with "Lesson of the World War," from which emerges the necessity for a "Department for the Science of National Defense."

The book gives the lines on which the German youth has been (and probably still is) taught; the points of view on military geography are interesting. In his preface, the author states:

> "We are on the threshold of an iron age. For us, it stands under the sign of the Third Reich . . . We want an empire in which we can once more profess and call ourselves Germans without fear of being sat upon . . . Mighty empires are not founded by treachery, deceit, or huckstering; they only grow out of the clash of swords. The Third Reich, as we dream of it—from the Flanders coast to the Raab, from Memel to the Etsch (Adige) and the Rhone—can also only be born in blood and iron . . ."

Engelbrecht, H.C., & Hanighen, F.C.—**Merchants of death.** A study of the international armament industry. 1934—308 pages ..... M 614-A5

Seldes, George.—**Iron, blood and profits.** An exposure of the world-wide munitions racket. 1934—397 pages ..... M 614-A5

Reviewed by Major F. During, Infantry

We have had a number of books on the physical horrors of twentieth-century warfare. There have been fewer books on the moral horrors, which are least in evidence in the front lines—where there is no hypocrisy and no profiteering. The moral horrors increase as one retires from the front line.

The two books listed above are alike in their quality of indignation, and somewhat alike in the ground covered.

There are doubtless as many kinds of munition makers as there are of grocers. The history of the du Ponts shows several instances of patriotic self-sacrifice, and, as Messrs. Engelbrecht and Hanighen tell us, they have, on their own showing, reduced their output of military goods to 2 per cent of the total. Andrew Carnegie made armor plate, but he also endowed a peace organization. Nobel cherished the pathetic belief that high explosives would abolish war, and established the most famous of world peace prizes. America has had profiteers just as regularly as it has had wars, but its armament manufacturers have at least a slightly cleaner peacetime record than those of Europe.

The testimony of these two books, however, is that munitions making has not been, in fact and as a whole, an honest business.

Mr. Seldes relates that Alexander Yarrow, a British designer of the Eighties, made and sold 110 torpedo boats for the Russian Navy "at a time when war between Russia and Britain threatened." He then "made a rousing armament speech, warning England of the danger the Russian Navy had become" and "Britain ordered fifty [torpedo boats] from Yarrow in 1884 and 1885." Both books refer to the attempt of Paul von Gontard, the German munitions manufacturer, to secure orders for machine guns from the German Government by publishing in Parisian newspapers the (false) assertion that "the French Ministry of War has decided to accelerate considerably the provision of new pattern guns, and to order double the quantity at first intended."

The armament makers were, and seemingly still are, truly international. Krupp, down to the beginning of the World War, sold half of his heavy artillery outside of Germany. The English Vickers made guns before the World War which were later used against the Anzacs at the Dardanelles. A merry international traffic in war supplies between the Allied Powers and the Central Powers actually went on during the World War. After the War Krupp sued and recovered from Vickers certain patent infringements involved in the making of munitions for the British Army.

During the War, according to Messrs. Engelbrecht and Hanighen, the Germans sold iron and steel to the Allies through Switzerland and bought chemicals in return. German soldiers in front of Verdun died on barbed-wire entanglements on which could be read the name of a German factory. A German manufacturer, Senator Possehl of Lubeck, imported steel from Scandinavia into Russia during the War to keep munitions factories which he owned in Russia going; his excuse (which was accepted) was that otherwise the factories would have been confiscated. These instances were a natural consequence of the inevitable internationalism of the private trade in munitions of war.

Krupp was forbidden by the Treaty of Versailles to make any more cannon, and the great English firm of Vickers had to contract drastically in order to avoid bankruptcy. But Vickers, after its setback, "survived and showed signs of recovery," and Krupp bought into the Swedish firm of Bofors, which employs Krupp patents. Under Hitler this thin subterfuge is no longer necessary. Hitler, rearming Germany, is backed by Thyssen,

"the steel magnate of the Ruhr"; it is even charged that the French munitions magnate, Schneider, has been furnishing tanks to Germany. The total yearly exports of military goods from all countries, according to Messrs. Engelbrecht and Hanighen, amount to $200,000,000—a small item in itself but of great political importance.

America's great era of profit in this field was, of course, during the World War, when some $10,000,000,000 worth of American goods, mostly for war purposes, were sent abroad. What of the post-war situation? For the fullest account it is best to turn to the pages of Mr. Seldes.

No "arms ring" has the power in America that similar rings have abroad, even on the most critical showing. No "Comité des Forges" which, as Mr. Seldes asserts, "can direct the country toward peace or toward war" exists here. But Mr. Seldes does charge that "before and since the World War the munitions lobby in Washington, openly denounced by one American President after the other, has hampered or defeated the proposals of Wilson, Harding, Coolidge, Hoover, and Franklin Roosevelt to curb armament trade with warring countries."

What is the way out? "To eliminate the arms industry," Messrs. Engelbrecht and Hanighen believe, "requires the creation of a world which can get along without war by settling its differences and disputes by peaceful means." Mr. Seldes sees only two ways in which peace can come—peace through desolation and exhaustion, which would follow a new war fought with gas and other horrible "improved" devices "or a change in the mentality of nations, which might today adopt the principle, 'If you want peace, prepare for peace.'" [*New York Times Book Review*, 29 April, 1934]

Hulbert, Archer B.—**Overland to the Pacific.** Vol. I: Zebulon Pike's Arkansaw Journal; Vol. II: Southwest on the Turquoise Trail. 1932, 1933—200, 301 pages.....978

CONTENTS: Vol. I: Introduction to "Overland to the Pacific" by the General Editor; Zebulon M. Pike—His life and papers; The purpose of Pike's Expedition; Pike's "Journa of a Voyage"; Index.

Vol. II: Part One—The Santa Fé Trail: The Vanguard of the Pioneers—With bibliographical resume 1810-1825; Vial and Becknell—Pathfinder and road breaker; A trail born of a trade; The survey of the Santa Fé trail; General Sibley's Santa Fé diary; Alphonso Wetmore's diary of 1828. Part Two—Extensions of the Santa Fé Trail: Pike's tour of New Spain; Armijo's New Mexico—California Diary 1829-1830. Index.

Reviewed by Lieutenant Colonel E.B. Walker, C.A.C.

These two volumes endeavor to "fathom the continuity of an unfolding picture of geographical discovery." Volume I is a reprint of Zebulon Pike's Arkansaw Journal, and covers his trip and explorations across Kansas and into the mountains of Colorado up to the time he was taken into custody by the Spanish authorities and taken into Mexico. The justification for the reprint lies in the discovery in 1908 of his original maps and their return to our government a hundred years after being taken from Pike. It covers Pike's journey in the heart of winter into the fastnesses of the Rocky Mountains, and indicates the intense hardship and suffering endured by his men who never received any recognition by the government for their services which made some cripples for life.

The many footnotes add to present-day interest. It could have been made more attractive and interesting by including modern maps showing t hereon the routes and present-day names. The maps are of too small a scale to read readily and follow his daily journeys, although by careful reading in conjunction with footnotes it is possible to follow him day by day.

Volume II, *Southwest on the Turquoise Trail*, contains the first diaries of the journeys to Santa Fé. It is full of interest to anyone to whom the early days of exploration and penetration into the Southwest appeal. It gives an account of this first ascent of Pike's peak, which, by the way, Pike did not name but which took his name many years after Pike first saw "the blue mountain." The book contains Vial's Santa Fé—St. Louis diary, the survey of the Santa Fé Trail, General Sibley's Santa Fé diary,

and others. It also contains Pike's observations on his enforced trip into New Spain and Armijo's diary of his trip from New Mexico to California. The book covers roughly the period 1810-1830, picturing the gradual development of what became known as the Santa Fé Trail. With a little imagination and reading between the lines, one cannot help but wish to follow the trails of adventure and hardships told here in such matter of fact and often terse reports. Would you think it possible in those days of horse and foot travel to go 1440 miles in less than 14 days? The Hunt Astorian party did it.

Infantry School (Military History and Publication Section).—**Infantry in battle.** 1934—386 pages.....M 404-J1-A.73

CONTENTS: Foreword, by Major General Edw. Croft, Chief of Infantry; Introduction, by Colonel George C. Marshall. Obscurity; Simplicity; Rules; Surprise; Mobility; Terrain; Miracles; Decisions; Optimism and tenacity; Orders; Counterorders; Supervision; Control; Command and communication; Action and morale; Nearing the enemy; The advance to the attack; Battle reconnaissance; Time and space; Direction; The plan; Scheme of maneuver and main effort; Fire; Fire of machine guns; Infiltration; Infantry-artillery team; Night attacks; Index.

Reviewed by Major C.A. Willoughby, Infantry

The great majority of commissioned officers of our Army will have passed through various service schools before they complete their professional career. Most of these schools maintain historical sections, or departments; occasionally there is a feeling that these sections are something apart from the "practical" labors of other sections devoting themselves to tactical problems. Of course, human nature being what it is, the student body will always regard problems that may be graded, with more attention than those instructional presentations, like historical lectures, that are not punitive in character. The contribution, by historical departments, to the curriculum of the average service school, however, is just as tangible as the efforts of the tactics departments; in fact, by those familiar with pedagogy, that contribution may be rated as superior, because the historical sections are potential guardians of thought, of tradition, of recorded experiments in that great laboratory of military science: military history.

The remarkable volume, *Infantry in Battle*, issued by the Military History and Publications Section of the Infantry School, is a recent instance of the potential service rendered by a department of history. It is a well-established feature of all service schools, to require their students to submit professional studies, similar to the graduation thesis of civil institutions; obviously, there must be papers of historical and professional value in this annual output. This work represents a careful selection of significant battle studies of small units, by former students at the Infantry School. In the endless stream of World War literature, certain works are becoming known because of sheer merit, or significance—works of the type of Grasset's *La Guerre en action;* Allehaut's *Le Combat de l'infanterie;* Spear's *Liaison;* or any titles approved by that critic-of-reality, Mr. Cru, in his inimitable *Du Témoignage.*

These studies have one thing in common which elevates them above their contemporaries—there is an atmosphere of reality about them which marks them as factual, authentic, authoritative. As the years elapse since those stirring events, that flavor of reality will disappear from war literature and a generation of younger officers will be out of touch with the realities of their profession, except for books of the type of *Infantry in Battle.* After all, battles are an aggregate of combats, waged by companies and battalions—the cutting-edge of all military effort. In the ordinary historical narratives, these very combats are apt to become obliterated in the vague outline of operations of larger units, and yet, they are the marrow of each action. By far the largest part of an officer's peace-time career will be spent within the scope of these units, and his major task will be their preparation for war; consequently, it is imperative that this process of training remain linked with the realities of war. There

is every reason to believe that *Infantry in Battle* will furnish the background and yard-stick for this training.

This work has received unqualified professional approval, at home and abroad:

Canadian Defence Quarterly, July, 1934.—". . . The U.S. Infantry School and the authors of this work are to be congratulated; the school for sponsoring this study, and the authors for the excellence of the production both as to sequence and matter. . . The lessons dealt with are identical to those which every tactical instructor in Canada is constantly trying to drive home, consequently we have no hesitancy in commending this excellent study both to the officers and noncommissioned officers of our land forces."

Army, Navy and Air Force Gazette, 31 May, 1934.—"There is no equivalent to this book in this country . . it is safe to say that Infantry armed with the knowledge contained in this book will be as well armed against surprises, which a future conflict may produce, as history can make it. This is a book which will be a boon to all those who have the task of indoor tactical training of officers and noncommissioned officers, whether in Regular or Territorial units."

Jochim, Colonel Theodor.—**Die Operationen und ruckwartigen Verbindungen der deutschen 1. Armee in der Marneschlacht 1914.** [Operations and lines of communication of the German First Army in the Battle of the Marne, 1914.] Germany, 1933—143 pages.....M 9403-J.44:4N5.43

CONTENTS: Vorwort. Zusammensetzung der 1. Armee und Organisation des Nachschubes zu Beginn des Krieges; Der Vormarsch zur Marne—Operationen—Rückwärtige Verbindungen; Die Marneschlacht; Der Rückzug hinter die Aisne; Rückblick.

Reviewed by Major C.A. Willoughby, Infantry

Tactical operations and lines of communication service are inseparably linked; there is no basis for troop movements, of a strategical or tactical order, without adequate supply in munitions, subsistence, and matériel. Lines of communication are extremely sensitive to any interference and, consequently, require constant and direct attention by the high command. The operations of the German First Army are replete with incidents, as proof of the extraordinary problems involved in supply functions, in situations that demand displacements of large units, combined with serious combat.

The Army commander was apparently fully aware of his responsibilities and the staff of the First Army gave supply, and its ramification, direct and unremitting attention. Since this Army was engaged in operations of the most varied character, and under surprising situations, the successful solution of their supply problems may contain data of value for our days.

There is already considerable literature on Kluck's operations, but this study is oriented from a supply viewpoint and furnishes, therefore, a factor which is ordinarily overlooked or insufficiently appreciated.

Justrow, Oberstleutnant Karl.—**Feldherr und Kriegstechnik.** Studien über den Operations-plan des Grafen Schlieffen und Lehren für unseren Wehraufbau und unsere Landesverteidigung. [Army command and technical resources. Study of the operations plan of Schlieffen and lessons for future defense.] Germany, 1933—330 pages.....M 9403-H1-D.43

CONTENTS: Geleitwort von Friedrich Seeszelberg; Vorwort; Einleitung—Das Problem des Krieges. I. Teil.—Der Feldherr; II. Teil.—Die Technik bei den kriegerischen Operationen; III. Teil.—Die kriegerischen Operationen von 1914 in technischer Beleuchtung und ihre Lehren. Schlusszwort; Anhang.

Reviewed by Major F. During, Infantry

Colonel Justrow brings out in his book that success in war is now dependent on the use of a great many technical and scientific means and not on the array of infantry, artillery, and cavalry on a battlefield. According to Colonel Justrow, technical advisers had little influence in 1914 to 1918, and the war was conducted by strategists and tacticians without technical training and without real knowledge of the use of technical arms.

The author proceeds to criticize Schlieffen and his famous plan. Schlieffen, he states, had a purely outside attitude to technique and did not know how to get the most out of the weapon which he himself had provided. His plan had many weaknesses; for instance, the French Eastern Front was not *unassailable*, as he thought; yet, in order to avoid this front he sacrificed the good opinion of the world and brought Great Britain into the war by violating Belgian neutrality. His wheel through Belgium and his ideas of a "Cannae" were suitable for a small campaign or a battlefield, but were entirely unsuitable to be applied on the gigantic scale proposed. Surprise, which was essential, was impossible when millions of men were employed. In the technical use of radio and telephones and in the provision of an efficient signal service, the German General Staff failed completely. Insufficient arrangements were made for the supply of ammunition. Colonel Justrow points out that changes made by Moltke in the Schlieffen plan were relatively small. According to Colonel Justrow, Schlieffen's last words were not "make the right wing strong," but "not only the northeast front, but the whole front to the Swiss frontier must be attacked."

The present judgment of many critics of the Schlieffen plan is "false and fantastic," according to Colonel Justrow, who proposes an alternative plan. Instead of turning the French flank and enveloping it via Belgium, he would break the French front. After providing for frontier security, he would assemble the German First and Second Armies north and south of Metz with the Third and Fourth Armies behind them. Having massed the heavy and super artillery, he proposes to make the break-through on the front: St. Mihiel to Verdun (inclusive). A break having been made in the French front, the armies should then spread fanwise, right and left, to a line: Abbeville—Noyon—Rheims—Langres—Besancon. In the meantime the frontier troops should have advanced and seized the line: Liege—Namur. On the left, the Belfort—Epinal and Toul fortification should have been captured. The next general advance would be to the line of Seine—Paris (exlusive)—the line of the the Yonne and Armancon Canal to Chalons sur Saone.

Theoretically a fine plan, but the reviewer doubts whether it was fear of being unable to break through the French fortress front which prompted Schlieffen to go through Belgium.

Kabisch, Generalleutnant Ernst.—**Der schwarze Tag. Die Nebelschlacht vor Amiens (8./9. August 1918).** [Black day of Germany. Battle of Amiens, 8-9 August, 1918.] Germany, 1933—209 pages.....M 9403-J.44:8-U2

CONTENTS: Vorspuk; Werden wir es schaffen?; Auf verlorenem Posten; Die hohen Oberkommandos; Im strengsten Geheimnis; Feindliche Kräfte; Die Netze werden gestellt; Die letzten 24 Stunden; Das Unwetter bricht los; Die Dämme zerreiszen; Wellenbrecher; Allgemeine Sturmflut; Nachlese.

Reviewed by Major F. During, Infantry

In the history of the World War, 8 August, 1918 is considered as the black day for Germany. On this day the German Second Army met with one of the biggest reverses of the entire war. General Kabisch's book brings out in detail the happenings of this day. He doubts, however, whether August 8th was the beginning of the end for Germany, but believes that it was during July, 1918. The German attack at Rheims on 15 July, 1918 was unsuccessful and the French counteroffensive on July 18 took

the initiative from the Germans and put them on the defensive. But nevertheless, the great success of the French on 8 August, 1918 was a surprise to Germany. General Kabisch gives as the reason for the success of the French, the fact that during the morning hours a dense fog, permitting visibility for a few yards only, had appeared. "We can understand how easy it is to lose one's head, if we consider the few German troops on outpost duty, their bodies pressed close to the ground in order to seek protection from the terrific enemy artillery fire, when suddenly out of the dark fog, an overwhelming force of 550 tanks were on top of them." As soon as the fog disappeared the German defense tightened.

In conclusion, General Kabisch says that the worst and most far-reaching effect of this battle was not the success of the French, but the fact that the German high command, by reason of reports pertaining to the morale of the German troops, "lost confidence in the ability of the German Army to hold on much longer." The battle itself is most vividly and dramatically portrayed.

Kearsey, Lieut.-Colonel A.—**Notes on the Campaign in France, 1914.** From the beginning of hostilities to the end of the Battle of the Aisne. London, 1933—69 pages.....M 9403-J.44:4

CONTENTS: Appreciation of the situation from the German point of view before the outbreak of War; Appreciation of the situation from the point of view of the French Commander-in-Chief at the beginning of August, 1914; Diary of events; Battles described with lessons to be learnt from them, namely—Mons, Elouges, Solesmes, Maroilles, Landrecies, Le Cateau, Le Grand Fayt, Etreux, Cerizy, Néry, Crépy-en-Valois, Villers Cotterets; Battles of the Marne and the Aisne described with lessons to be learnt from them; Appendices; Index.

Reviewed by Major V. Meyer, Field Artillery

This publication is of particular excellence as a reference book since it is brief without sacrificing clarity of detail or essential information. It covers the 1914 open warfare period, hence historical illustrations abound for all types of tactical situations engaged in by units from the size of a company to an army.

In the ordinary reading of military history, it is difficult to find out definitely just what the smaller units, such as battalions and regiments, did under various tactical situations since most writers incline to the "big picture." Not so with the "Notes." Every type of situation is given; the units engaged therein are listed and salient features are emphasized. With these valuable data as a guide and framework, further research can be intelligently pursued by means of Official Histories and other kindred volumes.

Colonel Kearsey points out the important lessons to be learned from a study of each engagement, whether big or little. The most important and most often reiterated of these lessons are:

Effect of envelopment
Value of surprise
Necessity for good information
Influence of topography on operations
Disposition in depth
Use of the reserve
Cooperation of infantry-artillery
Combat liaison
Command and staff liaison.

Königsdorfer, Major General.—**Beispiele von Sperren.** [Examples of obstacles.] Berlin, 1933—48 pages.....M 503-D9

CONTENTS: Geleitwort; Vorwort. Die Marnelücke 1914; Der rechte Flügel der 6. Armee in der Lothringer Schlacht am 20. August 1914; Das Entkommen der belgischen Armee aus Antwerpen; Die Schlacht von Tannenberg; Sicherungsmöglichkeit der österreich-ungarischen Heeresflanke in Galizien 1914 durch Sperren; Rückzug und Verfolgung in Oberitalien 1917.

[The battle of the Marne, 1914; The right wing of the German Sixth Army in the Lorraine battle of 20 August, 1914; The withdrawal of the Belgian Army from Antwerp; The battle of Tannenberg; Events on the east flank of the Galician Army in August, 1914; The pursuit of the Italian Army in 1917.]

Reviewed by Major F. During, Infantry

An obstacle is an important weapon of the commander; it strengthens the defense and saves strength for the attack at the decisive point. Under the term "obstacle," the author includes all measures undertaken to slow up or stop the enemy's advance. During the late war such obstacles were seldom, and in a larger way, never made use of.

This booklet cites historical examples where obstacles could have been used advantageously, such as the gap within the German First Army at the battle of the Marne in 1914; the right flank of the German Sixth Army on 20 August, 1914; the withdrawal of the Belgian Army from Antwerp; the battle of Tannenberg; the events on the east flank of the Galician Army in August, 1914; and the pursuit of the Italian Army in 1917.

Besides passive measures, the author suggests active measures, such as cavalry, motorized units with attached engineers carrying explosives. Centralization and timely orders by the higher command are considered essential for the success of the use of active or passive obstacles.

Liddell Hart, Captain B.H.—**'T.E. Lawrence'—In Arabia and After.** London, 1934—454 pages.....M 942-B92 (LA)

CONTENTS: Preface. Book One—Personal Prologue: The 'Crusader.' Book Two—Historical Prologue: 'The sick man'; The life-line; The undercurrent. Book Three—The Arab Revolt: Introduction; The tocsin rings; Men or a man; The wedge; Spreading ripples; Martial reveries; Spreading the infection; Strategy fulfilled; A new horizon; Securing the base; Leverage on Palestine; A 'regular' campaign; More and more regular; The final stroke—preparation; The final stroke—execution; The road to Damascus. Book Four—After: Troubles of a man with a conscience; The 'seven pillars of wisdom'; Fulfilment. Epilogue; Index.

Reviewed by First Lieutenant C.T. Lanham, Infantry

No matter how radical the frequent pronouncements of Liddell Hart may be, they are invariably starred with one great virtue—they provoke thought. His latest work is no exception. As usual, his craftsmanship is masterful and his thought startling. But it is still more startling to see our foremost commentator on the modern military scene leap headlong from his chosen role of iconoclast to that of hero-worshipper. In all truth it must be said that he is equally at home in either part.

In his preface to this book, Captain Liddell Hart states that he began his research with the intention "of writing an historical sketch of the Arab Revolt in which T.E. Lawrence would naturally fill a large corner." Indeed, he expected that Lawrence's personal achievement would be "less than legend conveyed." Instead, as his "study went deeper and further," he found that Lawrence *was* the Arab Revolt. The result was a recasting of the volume, the finished product emerging as a virtual biography of that modern enigma Aircraftsman Shaw (sometime Lawrence). It is a book that no military man should miss.

Captain Liddell Hart's study of the Arabian campaign is a classic of irregular warfare that contains many a meaty morsel for the earnest student of the military art. Although the author's endeavor to shake the pillars of orthodoxy with the conclusions he draws from this *tour de force* in the desert will provoke violent disagreement, the reader will realize that the implications of that strange campaign are far-reaching and can not be ignored.

In pursuit of his avowed aim of elevating Lawrence to the rank of Great Captain, the author resorts too frequently to the device of detracting from the acknowledged great. Not even Bonaparte emerges with a whole skin when Captain Liddell Hart completes his comparison with the ubiquitous Lawrence. But his favorite straw-man is Foch. Again and again he sets him up for the sheer joy of knocking him down. He reaches the climax in this direction, perhaps, when he says that Lawrence has found "that much of the text book that made Foch's reputation as a military thinker was an unacknowledged 'crib' from a German writer." These occasional thrusts, just or unjust, detract from the author's thesis in that they smack too strongly of prejudice and the special case.

Some parts of this book will unquestionably irritate the reader; some stir him to violent disagreement; and many seem outre and bizarre. But no one who completes it will be the poorer for the effort. Many avenues of refreshingly new thought are opened and most of them are definitely worthy of further investigation.

Lippmann, Walter.—**The United States in world affairs, 1933.** 1934—342 pages.....327.73 (A)

CONTENTS: Introduction; The interregnum; Nationalism intensified; The Versailles system—The division of Europe; Departure from the gold standard; American intercession in the European crisis; Token payments and moratoria; The World Economic Conference—stabilization phase; The World Economic Conference—Projects and results; National measures for recovery; Cuba and the Caribbean; Pan-Americanism and the League of Nations; The American gold and silver policy; The deadlock over debts and armaments; The Far East and Russia; Selected bibliography; Appendices; Index.

Reviewed by Lieutenant Colonel A. Gibson, C.W.S.

This book is an objective record of American foreign relations during the year 1933.

It is prepared and published under the auspices of the Council on Foreign Relations. This Council is composed of a group of outstanding American scholars, educators, and leaders in public affairs who are patriotically working toward furnishing to the American people, month by month, a clear and objective picture of international relations.

The association publishes a most important American quarterly review entitled *Foreign Affairs*, which, as a magazine, has tended to cover throughout the year much of the material contained in the book.

As the title page indicates, the book is not the work of one author. Messers. Charles Merz and William O. Scroggs have collaborated in writing the volume. Throughout the planning and the carrying on of this work they have had the editorial advice of Mr. Walter Lippmann, who has written the introduction.

As Walter Lippmann states, the book sets forth with relevant detail the events of 1933 as they bear upon the position of the United States as a world power and as a part of the world economy. The book describes the particular street which the United States has been crossing in 1933, while Lippmann's introduction goes up to the top of a tall building and takes a general look around to see where the street lies in the plan of the city.

The selected bibliography is extensive and very valuable. The ten appendices contain summaries of important documents, chronologies, etc., that add greatly to the usefulness of the text. The table of contents and the index are very complete.

Altogether, it is probably the one book for the general reader or the student interested in America's part in the world events of 1933.

Ludendorff, General Erich.—**Mein militarischer Werdegang.** [My military life.] Germany, 1933—189 pages...M 9403-E4-E.43-B92 (LU)

CONTENTS: Vorwort; Von der Geburt bis zum Leutnant 1882; Vom Leutnant bis zum Hauptmann in Generalstabe 1895; Bis zur Versetzung in die Aufmarsch—2. Deutsche—Abteilung des Groszen Generalstabes 1904; In der Aufmarsch—2. Deutschen—Abteilung und Lehrer an der Kriegsakademie; Wieder in der Front als Regimentskommandeur in Düsseldorf und Brigadekommandeur in Strasszburg i. Els.

Reviewed by Major F. During, Infantry

Ludendorff describes in this book his early days at home and gives his parents credit for his mental and physical characteristics. He then describes the rigorous training in the Cadet Corps and his life as a junior officer; the latter gives a picture of the officer corps of the pre-war German Army.

While still a young lieutenant he was ordered to duty with the Marines, after which detail he became a student at the War College. This was followed with a detail with the Great General Staff. Since regulations

required that all General Staff officers must have experience in actual command of troops, Ludendorff in turn, became company, battalion, regimental, and brigade commander. It is of interest to note that Ludendorff, as a member of the G-2 Section of the General Staff, worked under Schlieffen on the latter's well-known plan. In 1908 he became Chief of the G-2 Section and as such had to work out the plan of concentration for the German Army. Speaking of his experience at the General Staff, he says, "I saw in the General Staff not only the head, but the heart of the Army."

The experience of Ludendorff before and during the War throws a clear light upon the general method of selecting the higher leaders in the German Army and in the General Staff.

The book is a valuable biography of the World War period.

Puleston, Captain William Dilworth.—**High command in the World War.** 1934—331 pages.....M 9403-E3-C.73

CONTENTS: Preface; Method of development; Basic causes of the War; European diplomacy and war; Great Britain's preparations; The British government in 1914; Mobilization of British fleet; The British government at war; The tasks confronting the British Navy; German submarine operations in 1914; The fighting in France in 1914; The German reaction to the Marne; Joffre and the French government during the autumn of 1914; The Near East and India—The policy of Turkey; Diplomacy of the Allied Powers during the early days of the World War; The Grand Fleet vs High Seas Fleet in 1915; Joffre and von Falkenhayn in December, 1914; Dispersion of military effort; War in the east—The clash between von Falkenhayn and von Hindenburg; The minor theatres—The Central Powers prepare to crush Serbia; The minor theatres—The Dardanelles Expedition; The minor theatres—The Turkish reaction in Mesopotamia in the Spring of 1915; Control of the Sea in 1915; The approaching shadow of 1916—Verdun and Somme; The British and German fleets in 1916; Somme—Verdun; Minor theatres in 1916—Salonika Expedition; Submarine operations in 1916; Some political factors; Conclusions and reflections.

Reviewed by Commander Holloway H. Frost, U.S. Navy

Captain Puleston's book is really a brief history of the World War. Its particular merit lies in the fact that he has considered its rapid and intricate course from a broad viewpoint. Most authors on the War treat the subject from the viewpoint of one of the warring countries and then usually confine themselves to the operations of the military, naval, political, or economic forces. Captain Puleston, on the other hand, considers all the countries at war and all their instruments for enforcing their will on the enemy. The interaction of the various instruments of war and their combined effect on the enemy may be called national strategy. It evidently requires greater skill to coordinate the naval and military forces, the naval and the economic forces, the military and political forces, and various other combinations, than it does to operate merely one of these forces. There are few who have ever given consideration to the broad field of national strategy and the opinions and conclusions of one who has done so for many years deserves our careful study. Captain Puleston is very well qualified by his past work, by long tours of duty at the Naval and Army War Colleges, and by life-long reading and study.

The reader will find many positively stated opinions concerning the major events of the World War in this book. All are well-reasoned and show the result of careful estimates of the various situations. Captain Puleston hewes to the line and lets the chips fall where they may. The reader may find himself in disagreement with some of his conclusions, but this will have the good effect of causing him to estimate the same situations independently and come to his own conclusions. This thought-provoking characteristic of the book is not the least of its many good points.

One of the most interesting parts of the book treats of the methods by which the British government operated its forces. As our government and the character of our people are quite similar to those of the British, a study of the conduct of the war by the British cabinet provides many valuable lessons.

High Command in the World War well deserves the attention and consideration of all who are interested in this important subject. As in

every country civilians will supply the political and economic leadership for a nation at arms, the book is of interest to them as well as to members of the military and naval services.

Rogerson, Sidney.—**Twelve days.** London, 1933—172 pages.....M 9403-J.44:6N

CONTENTS: Foreword by B.H. Liddell Hart; Introduction; Up the line; Taking-over; Trench-holding; Relief; The way back; Into rest.

Reviewed by First Lieutenant C.T. Lanham, Infantry

Sidney Rogerson, sometime commander of Company B, 2d Battalion, West Yorkshire Regiment, has created in the 172 pages of this modest volume a picture that in its way is as compelling as *Journey's End.* The fascination of the narrative lies in its obvious truth and sincerity. The author is no propagandist for the purified-by-the-flame school nor is he purveyor to the ghoulish appetite of the horror seeker. He is content to tread the middle path of reason, setting forth what he saw and felt and understood in those last days when the Somme Offensive of 1916 "was spluttering out in a sea of mud." He found that "life in the trenches was not all ghastliness . . . it was a compound of many things; fright and boredom, humour, comradeship, tragedy, weariness, courage, and despair."

Perhaps the book can be best epitomized by an extract from Liddell Hart's appreciative foreword: "It embraces no action that history is likely to deem worth recording; no epic fact of attack or defense . . . yet this narrative of an insignificant sequence of days caught my interest at the outset and held it to the end."

Tannenbaum, Frank.—**Peace by revolution.** An interpretation of Mexico. 1933—317 pages.....M 972

CONTENTS: Acknowledgements; Flint and steel: Race, Religion, Politics; Revolution; Peace: Land, Labor, Education; Bibliographic note; Index.

Reviewed by Major C.A. Willoughby, Infantry

This is an analysis of Mexican conditions by a sympathetic observer; the subject is treated progressively in the following main divisions:

The Indian and the Spaniard.—The social revolution that has intermittently torn Mexico during the last twenty years may be best understood as an attempt to liquidate finally the consequence of the Spanish Conquest. This explanation of the Revolution is at the same time the best key to Mexican history.

The Spanish Conquest of Mexico left neither a unified race, nor a unified culture. The cultural and racial diversification is probably as great as, if not greater than, it was before the Conquest. In so far as the Spaniards have contributed to racial unification, it has been at their own expense as a race. The whites are declining in relation to both the Indians and the *mestizos.* The *mestizo* element tends to be more important in the valleys than in the mountains. There is a sharp line of demarcation between the *mestizo* and the Indian in the rural districts—The Indian being always the poorer.

Conflict of Church and State.—The strife between Church and State in Mexico is part of a general conflict between the village and the nation; between the Spaniard and the Indian; between the foreigner and the native.

That conflict has raged within the Church and without, and within the State itself.

The hasty conversion of millions of natives, claimed, for instance, by the early Franciscans, proved to have been only a superficial, even though an impressive, ceremony.

The Defeat of the Church.—In the last hundred years the Catholic Church in Mexico has been reduced to a hierarchical skeleton. It has lost its lands; it has lost its power; it has been largely destroyed as an

organization. But this change has had little effect upon the essential faith of the common people. The people are no less Catholic today than they were a hundred years ago. What Mexico has had all through the centuries is a local religion—the religion of the village, with an occasional greater saint in the neighborhood for special veneration.

The self-contained Indian community has reasserted itself, and the universal Church, one of the great institutions brought by the Spaniards, has been largely destroyed, liquidated.

Government by violence.—The violence learned during the struggle for independence was repeated and perpetuated until it became the rule in political conflict.

During the years of dissolution after independence, the army was not only the safest but also the most lucrative career. The army was the chief gainer from the general dissolution. In fact, government service, especially that of soldier, became almost the only dependable means of livelihood.

A rebellion was a serious matter for the government but not for the army. The army merely found in a rebellion a means of increasing its income, promoting its members, and securing funds not easily available before.

Between 1821 and 1845 the army destroyed the federal government of Mexico ten times, not counting the innumerable *pronunciamientos*, *levantamientos*, and rebellions that did not succeed.

The military budget exceeded the total income of the government fourteen times. That is, more than half the time the government income was less than the assigned military budget of the country. Such was the situation in a country that had no roads, no ports, no railroads, and no peace.

Violence and the ideal in politics.—A political theory, if it is to be useful, must reflect a society within which the idea it formulates is operative as a way of political conduct. There was no base of equality in Mexico. There could be no democracy; there could be no freedom. Political democracy in Mexico waited for a complete and profound social revolution.

For a century the conflict in Mexico had been between an ideal and a fact. The fact was anarchy, and the ideal, peace. The fact was servitude, and the ideal, freedom. The constitution of 1857 remained inapplicable.

The nonexistence of party organization, the lack of any sense of the rights of minorities, the complete absence of democratic habits and practices, made democracy a farce from the beginning.

Revolutions were perhaps an educational movement in Mexico; a costly one, it is true, but a substitute for the lack of any general education.

Because of the purely personal character of Mexican politics, the leader has always surrounded himself with his family, his intimate friends, his body servants. This is significant as a political method because it takes the place of party, of party principle, and of national patriotism.

Theoretically, Mexico under Díaz was not only a democracy, but a democracy of the advanced type. Mexico was at peace at the price of tyranny, humiliation, oppression, and foreign approval.

But Díaz failed. The peace that he gave Mexico proved transitory. It proved transitory partly because it was too well done.

Political issues at stake.—Properly speaking, Mexico was not a nation at the time the Spaniards departed for Spain. It was a colony with sharp internal, economic, cultural, and class divisions.

The first of the new struggles was the attack upon the army as a special and separate state within the State. The second was an attack upon the Church which, like the army, lived as a state within the State. The third was the attack upon the plantation, which also was a state within the State.

Another series of issues, of minor importance, concerned the kind of governmental organization, the kind of institutional set-up Mexico ought to have. A written constitution was always prepared and always

disregarded in practice. The Constitution of 1857, which finally set the kind of government, in theory, was soon in dispute.

In practice, dictatorship has been the rule regardless of the theory.

The three revolutions which have profoundly altered the structure of Mexican political and social life, from 1810 to 1930, were first the independence, second the *Reforma*, and third the Revolution of 1910. The first brought the *criollo*, the Mexican whites, into power; the second brought the middle class and the *mestizo* into power; and the third brought the Indian peasant out of oblivion.

What is Mexico's most insistent need? Peace! Internal peace, a sense of stability, of permanence, of security: that is the pressing need of Mexico.

Ziese-Beringer, Hermann.—**Der einsame Feldherr. Die Wahrheit uber Verdun.** [The lone leader. The truth about Verdun.] In 2 volumes. 1934—322, 214 pages.....M 9403-J.44:6-E

CONTENTS: I. Band: Das Rätsel Verdun; Die endlose Front; Der strategische Ideenkampf um den Sieg; Die Wertlosigkeitstheorie; Die Lehre von der Ausbluntung auf der Stelle; Der bescheidene eigene Aufwand; Die Truppe braucht Glauben; Der erste Schlacht; Der Rücktritt Erich von Falkenhayns. II. Band: Die zweite Schlacht; Ausblutung und Kriese des Menschenersatzes; Die Brücke zur Niederlage; Der Niederbruch Frankreichs; Der Sieg ohne Vollendung; Schriftenverzeichnis; Anhang.

Reviewed by Major C.A. Willoughby, Infantry

The extraordinary struggle around Verdun remains an enigma of purpose to this day. France proclaimed this gigantic event as a victory of first magnitude; the German official history seems to admit it as a defeat.

The name of Verdun has become a synonym for a struggle of utter exhaustion, a veritable holocaust of destruction in which the attack as well as the defense incurred incredible losses, in a relentless war of attrition.

This book is a curious attempt to justify, on psychologic—almost metaphysical grounds—the strategic conception of this attack against what was perhaps the strongest fortified locality in the world. Falkenhayn is pictured as an isolated intellect, driven on by an idea of enormous magnitude, throttled by stabilized warfare, which seemed to leave no hope for the future. Unable to return to a war of movement, the German forces were compelled to force an issue, whereby their opponents would be compelled to stand and fight on a give-and-take basis. Verdun seemed the only strategic area that would compel a last ounce of effort by the French.

It is true that the majority of available divisions of the French Army were drawn into the vortex of this ghastly struggle, some of them to be bled white, in strength and morale. The author sees the ultimate effect of this ordeal in the collapse of the morale of the French and the military mutinies of 1917. If that was the German purpose, they overlooked that their fighting machine also suffered irreparable damage in this struggle for the remnants of Ft. Douamont.

Section 7

LIBRARY BULLETIN

BOOKS ADDED TO THE LIBRARY SINCE SEPTEMBER 1934

All the world's aircraft, 1933. 1933 [M 603]

Armstrong: **Europe between wars.** 1934 [M 940-A]

Ashford: **A soldier in science.** 1934 [M 973-B92 (AS)]

Balbo: **My air armada.** (Translated by Gerald Griffin) 1934 [M 409-C.45]

Becker: **Verdun. Le premier choc de l'attaque allemande.** [Verdun. The first shock of the German attack.] 1932 [M 9403-J.44:6-E]

Bernis: **Essai sur le renseignement a la guerre.** [Essay on military intelligence in war.] 1934 [M 505-E3-A.44]

Brehme: **Mexiko.** [Mexico.] 1925 [972]

Buell: **New governments in Europe.** 1934 [940.5]

Chamier: **Fabulous monster.** 1934 [M 9403-E4-E.43-B92 (WI)]

v.Cochenhausen: **Kriegspiel-Fibel.** [War game manual.] 1933 [M 506-A7-D4.43]

Commerce, Dept. of. Bureau of the Census:

Census of manufacturers, 1931: Ammunition and related products, explosives, firearms, fireworks. 1933 [*M 614-G1]
Fifteenth Census of the U.S., 1930: Abstract of the Fifteenth Census of the U.S. 1933 [310]
Fifteenth Census of the U.S., 1930: Agriculture, Vol. III: Type of farm; Parts 2 & 3: Southern & Western states. 1932 [310]
Fifteenth Census of the U.S., 1930: Construction industry, reports by States with statistics for counties & cities of 100,000 population & over, a summary for U.S., & study of location & agencies of construction industry. 1933 [310]
Fifteenth Decennial Census of the U.S., 1930: Distribution. Vol. I: Retail; Vol. II: Wholesale. 1933 [310]
Fifteenth Census of the U.S., 1930: Irrigation of agricultural lands, general reports and analytical tables . . . 1932 [310]
Fifteenth Census of the U.S., Manufactures, 1929: Vol. I: General report, statistics by subjects; Vol. II: Reports by industries. 1933 [310]
Fifteenth Census of the U.S., 1930: Outlying territories & possessions, number & distribution of inhabitants . . . 1932 [310]
Fifteenth Census of the U.S., 1930: Population. Vol. II: General report—Statistics by subjects; Vol. V: General report on occupations. 1933 [310]
Introduction to the vital statistics of the U.S., 1900 to 1930. 1933 [310]

Congress: **The World Court.** Hearing before the Com. on For. Rel., U.S. Senate, 73d Congress, 2d Session, May 16, 1934. Pt. 2. 1934 [M 007-G4]

Conneau: **Historical sketch of the Cavalry Corps commanded by General Conneau from August 14, 1914 to March 2, 1917.** (Translated from the French) 1934 [M 9403-H6-C.44-H3-C (CO) C]

Davenport: **Zaharoff: High Priest of War.** 1934 [M 614-A5]

Dictionary of American Biography. Vol. XIV: Oglethorpe—Platner. 1934 [973-B920]

v.Eimannsberger: **Der Kampfwagenkrieg.** [Tank warfare.] 1934 [M 405-J1-A.43]

v.Einem: **Erinnerungen eines Soldaten, 1853-1933.** [Memories of a soldier, 1853-1933.] 1933 [M 943-B92 (EI)]

Federal Reporter, second series. Vol. 70 (2d) May—July 1934. 1934 [345.41]

Federal Supplement. Vol. 6, April—July 1934. 1934 [345.41]

France. Ecole Superieure de Guerre:

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Section 8

READERS' GUIDE AND SUBJECT INDEX

A

Air Arm
Ammunition
Animals
Antiaircraft Artillery
Antiaircraft Defense
Antigas
Antitank
Applicatory Exercises
Armaments
Armies (See country)
  Command & Staff
  Mobilization
  Organization & Equipment
  Training
Armored Cars
Art of War Strategy
Artillery (Other Arms, similarly)
  Command & Staff
  Organization & Equipment
  Training Tactics
Attack

B

Breakthrough Operations

C

Camouflage
Cavalry
Chemical Warfare Service
Civilian Conservation Corps
Coast Artillery
Command, Staff & Logistics
Counterattack

D

Defiles
Delaying Action
Disarmament

E

Engineers
Envelopment
Equitation

F

Fire Superiority
Flank Operations
Formations, Battle
Fortifications
France (Army of)
Future Warfare

G

Gas & Smoke (Use of)
Geography (Military)
Germany (Army of)
Government (Military)
Great Britain (Army of)

H

History (General)
Hygiene

I

Infantry
Intelligence (Military)
International relations
Italy (Army of)

J

Japan (Army of)
Joint Operations

K

L

Large Units, Organization & Tactical Functions (Army, Corps & Division)
Law, Military & International
Liaison

M

Machine Guns
Maneuvers
Map Problems
Marches
Marine Corps
Mechanization Mechanized Forces
Medical Service
Meeting Engagement
Mobilization
Motorization

N

National Defense
Naval Warfare
Navies (See country)
Night Operations

O

Obstacles
Ordnance Service
Organization
Overseas Expeditions

P

Penetration
Position Warfare
Principles of War
Pursuit

Q

Quartermaster Service

R

Raids
Riots
River Crossings

S

Security
Signal Service
Special Warfare
Supply

T

Tactics Operations
  Evolution of Tactics
  General topics
  Defensive combat
  Offensive combat
  Reconnaissance
  Special warfare
  Troop movements
Tanks
Technology
Terrain
Topography Surveying
Transportation
Turning Movements

U

United States (Army of)

V

Veterinary Service

W

War Peace
Wars (Ancient, Medieval, Modern)
World War
  E—General Military History
  F—Zone of Interior
  G—Arms & Services
  H—Military Conduct of the War in the Field
  J—Campaigns & battles
  L—Naval History

X

Y

Z

List of Periodicals Indexed

and

Key to Abbreviations

A&N Jour—Army & Navy Journal

A&N Reg—Army & Navy Register

AN&AF Gaz—Army, Navy & Air Force Gazette (Great Britain)

A Ord—Army Ordnance

A Quar—Army Quarterly (Great Britain)

Bul Belge Mil—Bulletin Belge des Sciences Militaires (Belgium)

Can Def Quar—Canadian Defence Quarterly (Canada)

Cav Jour—Cavalry Journal

Cav Jour [GB]—Cavalry Journal (Great Britain)

Chem War—Chemical Warfare Bulletin

CA Jour—Coast Artillery Journal

Es e Naz—Esercito e Nazione (Italy)

FA Jour—Field Artillery Journal

Ftg Forc—Fighting Forces (Great Britain)

Inf Jour—Infantry Journal

Inf Sch ML—Infantry School Mailing List

Jour R Art—Journal Royal Artillery (Great Britain)

Jour RUSI—Journal of the Royal United Service Institution (Great Britain)

Jour USII—Journal of the United Service Institution of India (Great Britain—India)

MC Gaz—Marine Corps Gazette

Mil Mitt—Militärwissenschaftliche Mitteilungen (Austria)

Mil-Woch—Militär-Wochenblatt (Germany)

Mil Eng—Military Engineer

Mil Surg—Military Surgeon

Nav Inst Proc—Naval Institute Proceedings

Pion—Pioniere (Germany)

QM Rev—Quartermaster Review

Rev Ej Mar—Revista del Ejercito y de la Marina (Mexico)

Rv l'Air—Revue de l'Armée de l'Air (France)

Rv d'Art—Revue d'Artillerie (France)

Rv de Cav—Revue de Cavalerie (France)

Rv d'Inf—Revue d'Infanterie (France)

Rv Gen Mil—Revue du Génie Militaire (France)

Rv Mil Fran—Revue Militaire Francaise (France)

Riv Art e Gen—Rivista di Artiglieria e Genio (Italy)

Roy AF Quar—Royal Air Force Quarterly (Great Britain)

RASC Quar—Royal Army Service Corps Quarterly (Great Britain)

Roy Eng Jour—Royal Engineers Journal (Great Britain)

Sanct Chris—Sanct Christophorus (Germany)

SC Bul—Signal Corps Bulletin

Wr & Wf—Wehr und Waffen (Germany)

Ws & Wr—Wissen und Wehr (Germany)

Ann Am Acad—Annals of the American Academy of Political & Social Science

For A—Foreign Affairs

For Pol Rep—Foreign Policy Association: Foreign Policy Reports

Scrib—Scribner's

Jan—January
Feb—February
Mar—March
Apr—April
May—May
Jun—June
Jul—July
Aug—August
Sep—September
Oct—October
Nov—November
Dec—December

A

ABERCROMBY, General Sir Ralph (1734-1801)

Sir Ralph Abercromby. The bicentenary of a famous soldier. (Jour RUSI—Aug 1934)

AERIAL WARFARE

The alleged vulnerability of the autogiro. (Ftg Forc—Aug 1934)
The mystery of the "Secret German Plans." (AN&AF Gaz—16 Aug, 13 Sep 1934)
Air attacks on the British Navy during the British maneuvers, 1933. (Wr & Wf—May 1934)
Aero-naval activities at the Dardanelles. (Rv l'Air—May 1934)
History of the explosive bullet in aerial combat. (Rv l'Air—Jun 1934)
B.M.G. ("Bombers must go.") (Ftg Forc—Oct 1934)
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AERONAUTICS

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AERONAUTICS (MILITARY)

Training and research in aeronautical engineering. (Mil Eng—Nov-Dec 1934)

AIR ARM

Command and Staff

Co-operation between the army and the R.A.F. (Jour USII—Jul 1934)
Prepare to carry out air recommendations. (A&N Jour—4 Aug 1934)
Air officers on General Staff. (A&N Jour—25 Aug 1934)

Organization and Equipment

The air defence debate. (AN&AF Gaz—9 Aug 1934)
The autogiro and its value to the field artillery. (FA Jour—Jul-Aug 1934)
The alleged vulnerability of the autogiro. (Ftg Forc—Aug 1934)
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The development of aircraft and its influence on air operations. (Jour RUSI—Aug 1934)
Small airships in the war. (Jour RUSI—Aug 1934)
German aviation to-day. (Jour RUSI—Aug 1934)
The future of the Navy in view of air development. (AN&AF Gaz—6 Sep 1934)
U.S. Army aviation. (AN&AF Gaz—27 Sep 1934)
War of tomorrow. Effects of progress of the past twenty years. (A Ord—Sep-Oct 1934)
Armament of airplanes. (Wr & Wf—Jun 1934)
Douhet and the doctrine of unity of matériel. (Rv l'Air—May, Jun 1934)
Naval aviation. (Rv l'Air—May 1934)
The air equipment of nations. (Rv l'Air—May, Jun 1934)
Method of keeping airplanes on the course when there is a wind. (Rv l'Air—May 1934)
Antiaircraft aviation in 1917. (Rv l'Air—Jun 1934)
History of the explosive bullet in aerial combat. (Rv l'Air—Jun 1934)
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B.M.G. ("Bombers must go.") (Ftg Forc—Oct 1934)
Australian air defence. (AN&AF Gaz—11 Oct 1934)
Armaments. (Roy AF Quar—Oct 1934)
Thoughts on mobility. (Roy AF Quar—Oct 1934)
The increasing burden of armaments. (For Pol Rep—24 Oct 1934)
The technical problems of modern war. (Ws & Wr—Jun 1934)
Survey of aviation. (Mil-Woch—11 Jun 1934)
Latest armament of airplanes. (Mil-Woch—25 Jun 1934)
Autogiros in wars of minor importance. (Mil-Woch—25 Jul 1934)
Vulnerability of air depots and factories. (A&N Jour—29 Sep 1934)
Aviation and national defense. (A&N Reg—4 Aug 1934)
Air Corps in army organization. (A&N Reg—4 Aug 1934)
National Guard, Reserve, and civil aviation. (A&N Reg—11 Aug 1934)
Air Force organization. (A&N Reg—6 Oct 1934)

Training Tactics

Signal communication in the 1933 Air Force Maneuvers. (SC Bul—Jul-Aug 1934)
Co-operation between the army and the R.A.F. (Jour USII—Jul 1934)
A cavalry command post exercise. [See Section 2]
Bombardment aviation and its relation to AA defense. (CA Jour—Sep-Oct 1934)
Brief notes of a liaison officer. (FA Jour—Sep-Oct 1934)
Notes on defense against an air attack of a column on the road. (FA Jour—Sep-Oct 1934)
Air, sea and land in Burma. (Roy Eng Jour—Sep 1934)
Aerial observation. (Riv Art e Gen—May 1934)
Air attacks on the British Navy during the British maneuvers, 1933. (Wr & Wf—May 1934)
The first squadron flight across French Africa. (Rv l'Air—Apr 1934)
Aero-naval activities at the Dardanelles. (Rv l'Air—May 1934)
The defense of a group of bombardment planes against pursuit planes. (Rv l'Air—May 1934)
The voyage of the Latécoère 300 "Southern Cross" in America. (Rv l'Air—May 1934)
The examination of standard type airplanes by reserve officers. (Rv l'Air—May 1934)
Some foreign contributions to the astronomy of aerial navigation. (Rv l'Air—Jun 1934)
Aeronautical miscellany. (Bul Belge Mil—Jun 1934)
The principles of war and the R.A.F.: Maintenance of the aim. (Roy AF Quar—Oct 1934)
Thoughts on mobility. (Roy AF Quar—Oct 1934)
Signal Corps weather service during Air Corps maneuvers on Pacific Coast, April-June 1933. (SC Bul—Sep-Oct 1934)
Effects of aerial bombing on a highway bridge. (Pion—May 1934)
The Italian manoeuvres, 1935. (AN&AF Gaz—18 Oct 1934)
Mobile warfare. (Es e Naz—Apr 1934)
Cooperation between ground and air in France. (Es e Naz—Apr 1934)
Artillery observation aviation. (Rev Ej Mar—Apr 1934)
Bombardment training plane. (Rev Ej Mar—Apr 1934)
The exhibition of English military aviation at Hendon. (Mil-Woch—18 Jul 1934)

Survey of military and commercial aviation. (Mil-Woch—4 Aug 1934)
The air defense maneuvers near London. (Mil-Woch—4 Aug 1934)
Technical survey. (Mil-Woch—18 Aug 1934)
Civilian aviation and passive air defense in France. (Mil-Woch—25 Aug 1934)
Role of the GHQ Air Force in the maneuvers. (A&N Jour—1 Sep 1934)
Alaskan flight makes fine record. (A&N Jour—1 Sep 1934)
Reconnaissance by air forces and the strategic maneuver of terrestrial armies. (Rv Mil Fran—Apr 1934)
Increase West Point air training. (A&N Jour—22 Sep 1934)
The Army Alaskan flight. (A&N Reg—8 Sep 1934)

AMMUNITION

History of the explosive bullet in aerial combat. [Rv l'Air—Jun 1934)
Explosives and their effect. (Pion—May 1934)
Use of explosives against ice. (Pion—May 1934)

ANIMALS

The Camel Corps of the Sudan Defence Force. (Jour RUSI—Aug 1934)
Versatile horses. (Cav Jour—Jul-Aug 1934)
Horse situation in Ireland in 1933. (Rv de Cav—May-Jun 1934)
Compensations in equine conformation. (Cav Jour [GB]—Oct 1934)
Marathon trips of animal-drawn vehicles. (Mil-Woch—4 Jul, 25 Aug, 1934)
Smoke, gas, and hunting scent. (Jour R Art—Oct 1934)

ANTIAIRCRAFT ARTILLERY

Low thoughts about high fliers. (CA Jour—Jul-Aug 1934)
A broadcast hook-up for AA intelligence net. (CA Jour—Jul-Aug 1934)
Training antiaircraft machine gunners in the use of tracer control. (CA Jour—Jul-Aug 1934)
Components of anti-aircraft defense. (MC Gaz—Aug 1934)
A calculating machine, and its use with the laying mechanism of artillery in firing at moving targets, with especial reference to antiaircraft fire. (Rv l'Air—May 1934)
Railway antiaircraft artillery in Germany. (Rv d'Art—May 1934)

ANTIAIRCRAFT DEFENSE

Low thoughts about high fliers. (CA Jour—Jul-Aug 1934)
Antiaircraft Defenses: Their development during the War. (CA Jour—Jul-Aug 1934)
Components of anti-aircraft defense. (MC Gaz—Aug 1934)
Bombardment aviation and its relation to AA defense. (CA Jour—Sep-Oct 1934)
Antiaircraft aviation in 1917. (Rv l'Air—Jun 1934)
The defense against air attack. (Bul Belge Mil—Apr 1934)
The Italian manoeuvres, 1935. (AN&AF Gaz—18 Oct 1934)
Technical survey. (Mil-Woch—18 Aug 1934)

ANTIGAS

Gas requires a new defence corps. (AN&AF Gaz—27 Sep 1934)

ANTITANK

Anti-tank defense (front-line troops). (Inf Sch ML—Jun 1934)
Defense against combat cars and armored cars. (Sanct Chris—Apr 1934)
The use of mines in antitank defense. (Pion—May 1934)
Some reflections on antitank defense. (Rv d'Inf—Feb 1934)
Other reflections on antitank defense. (Rv d'Inf—Feb 1934)

ARMAMENTS

The development of military weapons since the Civil War. (Mil Eng—Sep-Oct 1934)
Defense against combat vehicles. [See Section 2]
The .45 automatic pistol. (Inf Jour—Sep-Oct 1934)
Munition makers and common sense. With an account of war-time bombing in the Briey District. (A Ord—Sep-Oct 1934)
The story of the Confederate Colt. (A Ord—Sep-Oct 1934)
Supervision of the trade in arms. (A Ord—Sep-Oct 1934)
Facts about munition makers. (A Ord—Sep-Oct 1934)
Recent developments in infantry weapons. (Inf Sch ML—Jun 1934)
Armament of airplanes. (Wr & Wf—Jun 1934)
Armaments. (Roy AF Quar—Oct 1934)
The increasing burden of armaments. (For Pol Rep—24 Oct 1934)
Foreign infantry: VII.—The Belgian infantry. (Rv d'Inf—Apr 1934)
The "Hole" in northern France. (Mil-Woch—18 Jun 1934)
Latest armament of airplanes. (Mil-Woch—25 Jun 1934)
Merchants of death. [See Section 6]
Iron, blood and profits. [See Section 6]

ARMORED CARS

Defense against combat vehicles. [See Section 2]
Salisbury Plain manoeuvres. (AN&AF Gaz—27 Sep, 4 Oct 1934)
The development of armored vehicles in foreign armies. (Sanct Chris—Feb, Mar 1934)
Evacuation of wounded from armored vehicles in action. (Sanct Chris—Feb 1934)
Defense against combat cars and armored cars. (Sanct Chris—Apr 1934)
Latest French views about armored vehicles. (Sanct Chris—Jun 1934)
Cavalry and combat vehicles. (Mil-Woch—11 Jun 1934)
Technical survey. (Mil-Woch—18 Jun 1934)
Armored cars or combat cars? (Mil-Woch—11 Jul 1934)
Mines in a war of minor importance. (Mil-Woch—18 Jul 1934)

ART OF WAR STRATEGY

The gambit in 1914. (Ftg Forc—Aug 1934)
Leadership. (Nav Inst Proc—Aug 1934)
Are the Generals ready? The true state of the armed forces of Europe. (Scrib—Sep 1934)
British strategy. (Jour RUSI—Aug 1934)
Lessons from Napoleon—I. Italy. (Mil Eng—Sep-Oct 1934)
Is defeat inevitable? (Nav Inst Proc—Sep 1934)
Russo-Polish War, 1919-1920. [See Section 2]
Influence of industrial production on military operations. (FA Jour—Sep-Oct 1934)
Let's put 'em across. (Inf Jour—Sep-Oct 1934)
War of tomorrow. Effects of progress of the past twenty years. (A Ord—Sep-Oct 1934)
Panic. (Inf Sch ML—Jun 1934)
Obscurity. (Inf Sch ML—Jun 1934)

The giving of orders in battle. (Mil Mitt—Apr 1934)
The difficulties of a war of coalition. (Mil Mitt—Jun 1934)
Technique in war. (Wr & Wf—May 1934)
Aeronautical miscellany. (Bul Belge Mil—Jun 1934)
Mobile warfare: 1648 and 1934. (Cav Jour [GB]—Oct 1934)
Hindenburg. By one who met him as an Army Corps commander. (A Quar—Oct 1934)
Enthusiasm and all that. The commanding officer. (A Quar—Oct 1934)
Seeing ahead. (A Quar—Oct 1934)
Fear as a factor in leadership problems. (SC Bul—Sep-Oct 1934)
Two prophets of the future: A military thinker; A young prophet. (Rv d'Inf—Apr 1934)
Battle of Mangiennes, 10 August 1914. (Rv d'Inf—Apr 1934)
The German military mind and doctrine of war. (Rv d'Inf—May 1934)
The advice of the Marshal of Belle-Isle to his son concerning the duties of a military leader. (Rv d'Inf—Jun 1934)
Strategy under changed conditions in the conduct of war. (Ws & Wr—Apr 1934)
The technical problems of modern war. (Ws & Wr—Jun 1934)
Mobile warfare. (Es e Naz—Apr 1934)
Lessons from Napoleon—2. Austerlitz. (Mil Eng—Nov-Dec 1934)
Maneuver and movement. (Mil-Woch—25 Jun 1934)
The psychological mission of the Army. (Mil-Woch—11 Jul 1934)
Rapid contact—methodical advance. (Mil-Woch—11 Jul 1934)
1756-57—1914. (Mil-Woch—25 Jul 1934)
Psychology of the German critics of the War. (Mil-Woch—4 Aug 1934)
Quick action or a planned advance. (Mil-Woch—11 Aug 1934)
Extracts from "The Conduct of War." VI.—Gravelotte—The first phase. (Jour R Art—Oct 1934)
Army command and technical resources. [See Section 6]
Reconnaissance by air forces and the strategic maneuver of terrestrial armies. (Rv Mil Fran—Apr 1934)
German strategy in 1918. (Rv Mil Fran—May, Jun 1934)
National Defense Department and defense strategy. (A&N Jour—20 Oct 1934)

ARTILLERY

History

The history of Battery D, 1st F.A., 1792-1934. (FA Jour—Sep-Oct 1934)
Comparison of arms and matériel used by the belligerants in the War of 1870. (Rv d'Art—Jun 1934)

Organization and Equipment

Artillery and infantry combination. (FA Jour—Jul-Aug 1934)
The autogiro and its value to the field artillery. (FA Jour—Jul-Aug 1934)
Maintenance of the truck-drawn battery. (FA Jour—Jul-Aug 1934)
Calibration of the range drum on the British 75-mm. gun, Model 1917, for use with the 37-mm. sub-caliber tubes. (FA Jour—Sep-Oct 1934)
Significance of mobility for heavy artillery. (Wr & Wf—Apr 1934)
An examination of the quality of field glasses. (Wr & Wf—Jun 1934)
Motorization of artillery in foreign armies up to the end of 1933. (Sanct Chris—Feb 1934)
A calculating machine, and its use with the laying mechanism of artillery in firing at moving targets, with especial reference to antiaircraft fire. (Rv l'Air—May 1934)
The technical problems of modern war. (Ws & Wr—Jun 1934)
Artillery observation aviation. (Rv Ej Mar—Apr 1934)
The liaison detachment. (Rv d'Art—Apr 1934)
Study of artillery densities in the French offensives of 1918. (Rv d'Art—May, Jun 1934)

Training Tactics

The third battle of Romagne. (FA Jour—Jul-Aug 1934)
Employment of artillery in an attack when a flank is exposed. [See Section 2]
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Practice march in winter. (Pion—May 1934)

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OBSTACLES

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Merchants of death. [See Section 6]
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P

PANICS

Panic. (Inf Sch ML—Jun 1934)

PERU (ARMY OF)

Organization of the Peruvian Army. (Rev Ej Mar—Apr 1934)

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Aerial

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Le Cateau, 26 August, 1914. (FA Jour—Jul Aug 1934)
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Q

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R

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S

SECURITY

A cavalry command post exercise. [See Section 2]
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The increase in the length of training in the Swiss Army. (Mil-Woch—25 Aug 1934)

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EUROPEAN AREA—WESTERN THEATER

1914

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Charge of Roman's platoon at Vance. (Cav Jour—Jul-Aug 1934)
The French VI Corps in the Battle of the Frontiers. (Inf Sch ML—Jun 1934)
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Lost opportunities. (Rv de Cav—May-Jun, Jul-Aug 1934)
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The counterattack of the German 73d Infantry Brigade at Lahna—Orlau on 23 August 1914. (Mil-Woch—25 Aug 1934)
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Notes on the Campaign in France, 1914. [See Section 6]
Interpretation of intelligence. G-2 of a corps. (Rv Mil Fran—Apr 1934)
River crossings in a war of movement. The Battle of the Meuse, 25 and 28 August 1914. (Rv Mil Fran—May, Jun 1934)
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1916

Twelve days. [See Section 6]
The lone leader. The truth about Verdun. [See Section 6]

1917

Maneuver of demolitions. [See Section 2]
The mystery of Lutzen. (FA Jour—Sep-Oct 1934)
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1918

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Evolution of infantry tactics, 1914-1918. [See Section 1]
Employment of artillery in an attack when a flank is exposed. [See Section 2]
Maneuver of demolitions. [See Section 2]
Anti-tank defense (front-line troops). (Inf Sch ML—Jun 1934)
Obscurity. (Inf Sch ML—Jun 1934)
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L—Naval History

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WEAPONS

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The new Stokes-Brandt mortar. (Mil-Woch—4 Jul 1934)
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WITHDRAWAL

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The operation of ammunition supply in a withdrawal. (RASC Quar—May 1934)
Russo-Polish War, 1919-1920. [See Section 2]
Operations of a British infantry battalion in the retreat from Mons. (Inf Sch ML—Jun 1934)
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Artillery in rear guard action. (Mil-Woch—4 Aug 1934)

Y

YUGOSLAVIA (ARMY OF)

Notes on the Yugoslavian Army. (Rv Mil Fran—Apr 1934)